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CREATE CHANGE

Final Report - Science

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1. Executive Summary

1.1 Background

On 12 June 2020, Australia's education ministers tasked the Australian Curriculum, Assessment and Reporting Authority (ACARA) to undertake a review of the Australian Curriculum from Foundation to Year 10 (the Review) to ensure it is still meeting the needs of students and providing clear guidance on what teachers need to teach. ACARA has worked in close consultation with the profession and key stakeholder groups to complete the Review. The Review looks over the existing 3 dimensions of the Australian Curriculum: the learning areas, general capabilities and cross-curriculum priorities. To improve the Foundation to Year 10 (F-10) Australian Curriculum, ACARA's broad aims are to refine, realign and declutter the content of the curriculum within its existing structure.

As part of the Review, ACARA invited public feedback on its proposed revisions to the Australian Curriculum. The consultations were open from 29 April to 8 July 2021. ACARA has contracted the Institute for Social Science Research (ISSR) at The University of Queensland to undertake an independent analysis of the data collected during the consultations and to prepare consultation reports to assist ACARA in completing the revisions. This report presents the key findings from the analysis of the consultation feedback for the proposed revisions to the F-10 Australian Curriculum: Science.

1.2 Consultation features and caveats

There were 3 channels in which feedback from consultations was received:

1. an online survey (Appendix A) on the ACARA website where respondents completed both closed-ended and open-ended questions on the proposed revisions to the introductory sections (the rationale, aims, organisational structure, key connections and key considerations), curriculum content (year level descriptions, achievement standards, content descriptions and content elaborations), overall feedback (the terms of reference for the Review), as well as demographics and organisational details;

2. open submission process, which involved providing written feedback by email to ACARA;

3. written feedback from the state and territory education authorities and national non-government sectors provided in response to invitations accompanied by guidelines that reflected the online survey structure.

The character of the consultation was public, and it was anonymous for participating individuals. This allowed participation of individuals and groups with varying understandings of the Australian Curriculum, the proposed revisions, and the terms of reference (TOR) of the Review. The consultations did not impose protocols to confirm the identity of participants or that participants submitted their feedback only once. Submissions received included instances of template emails (multiple emails with identical wording) indicating some mobilisation of stakeholder networks. The 3 different channels of capturing feedback were also associated with methodological differences (see Section 3.4.1).

Results of the consultation included in this report should be seen in this context. They report perceptions of participants captured through different channels in the consultation process without assuming that these are representative of relevant stakeholder groups. They present perceptions as they were conveyed by stakeholders without qualifying them against the proposed revisions to the curriculum and without making assessments about their professional or other value.

1.3 Methodology

Individual feedback received via emails was de-identified by ACARA prior to making it available to ISSR. Identification of organisations among email submissions was maintained so that the participating organisations could be listed in the reporting. Jurisdictional feedback also remained identifiable for documentation in the reporting.

Responses from the survey were only included when they had been completed, which required the participant to continue to the final page. The final page was determined by the selections made by the respondent. Data from quantitative questions were cleaned and checked for consistency and processed using statistical software.

ISSR developed a code frame (Appendix C) that defined the themes and subthemes that emerged from the open-ended responses and established rules for coding such open-ended responses to those themes and subthemes. This code frame was used to analyse and report the feedback provided via open-ended survey questions, open email submissions, and jurisdictional submissions.

Stakeholder perceptions are reported for each of the 3 channels without applying weights and without identifying more or less authoritative voices among participating stakeholders within each consultation channel.

1.4 Stakeholder response and profile

ACARA received 479 responses to the online survey, 114 email submissions and 9 submissions from jurisdictions and national sector peak bodies.

More than half of survey respondents were teachers (n=263). Schools (n=76) and school leaders (n=43) were the next most represented types of respondents. Online survey respondents from Queensland over-represented their state by almost 2.5 times (47% of all respondents versus 20% of Australia's population share), while New South Wales and Victoria were particularly under-represented among survey respondents. The distribution of survey respondents across the Government, Catholic and Independent sectors suggested potential over-representation of the Independent sector, relative to its size as measured by the share of student enrolments. There was a fairly even distribution between survey respondents who addressed the Foundation-Year 6 (F-6) curriculum and survey respondents who addressed the Years 7-10 (Y7-10) curriculum.

Of email respondents in this learning area, the majority could not be categorised into a stakeholder group, due to insufficient description. These were largely senders of template emails – emails with identical or largely identical text about the role of evolution and creation. The remainder represented some form of association or body. A further 12 submissions were made by teachers, including 4 groups of teachers. An additional 15 self-described as parents, or from the community.

Submissions were invited from each state and territory as well as the national sector peak bodies for the Catholic and Independent school sectors. Nine submissions were received in total: Queensland, New South Wales, Victoria, Western Australia, South Australia, Tasmania, the Northern Territory, Independent Schools Australia, and the National Catholic Education Commission. The Australian Capital Territory abstained from providing feedback at this point while noting its contributions to the Review via working groups, individual submissions, regular meetings and trial schools.

1.5 Stakeholder feedback

1.5.1 Online survey

The survey asked a series of 23 quantitative questions that sought agreement ratings[1]. These were grouped into 3 main sections: Introductory elements, Curriculum elements, and Overall feedback. Summary of key feedback is as follows:

- *Introductory elements*: Between 66% and 81% of respondents agreed or strongly agreed with the statements related to introductory elements. The level of agreement was highest for the rationale being clear about the importance of the learning area (78%) and the aims identifying the major learnings that students need to demonstrate (81%). They were lowest for the statements that the key

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[1] These questions had been set up as compulsory in Survey Monkey and included 5 options: Strongly agree, Agree, Disagree, Strongly disagree and Don't know. Percentages of respondents who agreed or strongly agreed are based on all respondents including those that selected the Don't know option.

connections section identifies the key opportunities to connect with other learning areas (67%) and that the key considerations section provides important information for planning teaching and learning (66%).

- *Curriculum elements*: Between 59% and 77% of respondents agreed or strongly agreed with the statements related to curriculum elements. Responses were most favourable in relation to the year level descriptions providing a clear overview of learning at year levels (77% agreement). Respondents were least likely to agree or strongly agree with the 2 propositions that the content elaborations provide useful illustrations and suggestions (62%) and that they provide a range of contexts for meaningfully integrating the general capabilities and cross-curriculum priorities (59%). In addition, respondents were also asked whether the amount of content in the content descriptions can be covered in each year. Just over half (52%) of respondents agreed or strongly agreed.

- *Overall feedback*: This section asked a set of questions covering the TOR of the Review and what it set out to achieve, as well as whether the introductory sections provide important information. While 74% of respondents agreed that the introductory sections provide important information, the 5 statements directly related to the TOR received lower agreement (between 41% and 57% agreed or strongly agreed). The statement that the curriculum content has been refined, realigned, and decluttered received the lowest level of agreement with 41% of respondents agreeing or strongly agreeing and 50% disagreeing or strongly disagreeing.

Relative to other matters of the introductory and curriculum elements, the below propositions received lower agreement ratings:

- the clarity of content descriptions in what should be taught;

- the achievement standards adequately reflecting a clear developmental progression;

- the usefulness of the content elaborations; and

- the amount of content that can be covered each year.

However, a majority of between 53% and 64% of respondents also agreed or strongly agreed with these propositions.

Respondents who gave feedback on the F-10 curriculum were generally less likely to approve of the survey statements that sought agreement than respondents who only commented on the primary or secondary school level of the curriculum. Secondary (Y7-10) respondents tended to agree at a higher rate with the TOR statements and some of the propositions in the Curriculum elements section of the survey (e.g. related to content elaborations and amount of content).

Responding school leaders and schools tended to be more positive in their responses than teachers and 'other' individual respondents. Respondents with links to Government schools were less likely to agree with the statements in the Curriculum elements section than their peers linked to Catholic and Independent schools. Of the 3 groups, respondents linked to Catholic schools were most likely to confirm that the Review had achieved its objectives (agreed with the 5 TOR statements).

Respondents linked to schools in metropolitan areas were somewhat more likely to confirm all the statements seeking agreement than respondents who were linked to regional schools.

The most commonly discussed themes across all open-ended survey feedback were around: *introductory elements, clarity, content has improved/should remain, content that should be removed, sequencing of content, inclusive content, implementation (out of scope),* and *manageability.*

Across the feedback, there were many positive comments around the proposed revisions. In particular, there was a sense that the refinements to the content descriptions offered improved clarity and the structure of the strands offered a better organisation of content. There was also support for the inclusion of inquiry questions and some cognitive verbs in descriptions. However, even alongside the positive comments, there was feedback for further revision to content, including further refinement to the strands/sub-strands, the

sequencing of content so that there was a clear progression of learning, and recommendations to reduce content further to improve the manageability of the amount of content that needed to be covered in a year.

Survey results are dominated by respondents who self-identified as school professional staff – teachers, school leaders and schools constitute 80% of all respondents. Overall results are further shaped by respondents from Queensland who constituted nearly half of all respondents. Due to the over-representation of Queensland respondents the overall survey results may be particularly influenced by the Queensland-specific context.

1.5.2 Email submissions

The leading themes that emerged from the email submission feedback related to content, with suggested additions or removal of specific content. These tended to focus around 4 key topics: religious-based concerns surrounding the teaching of evolution and the big bang within the F-10 curriculum; concerns surrounding the changes made to the Earth Sciences (e.g. surrounding the sequencing of content and the introduction of the rock cycle in Year 6); issues with the introduction of inquiry-based learning; and concerns about climate change education.

Overall, most submissions by schools and education bodies emphasised that they saw the new curriculum as an improvement – especially with the inclusion of First Nation Australians in the science curriculum. However, this praise was often followed with a call for more implementation resources for this specific aspect of the curriculum. However, very few said that the new curriculum had been decluttered and instead it had just been "re-organised and realigned". Most amendments to the content descriptions related to suggestions to wording of specific content descriptions rather than a general sentiment that the content descriptions were unclear.

Of the 114 email submissions, 42 were based on a template that was copied and pasted into individual emails before send-off. These emails constituted the bulk of emails that talked about religious-based concerns surrounding the teaching of evolution and the big bang and supported the inclusion of creationism into the curriculum.

1.5.3 Jurisdictional feedback

In total, there were 9 submissions from jurisdictional stakeholders in relation to the learning area of Science. The key themes in these submissions were *introductory elements* (commented on by 8 jurisdictions), *clarity* (commented on by 6 jurisdictions), *implementation* (commented on by 8 jurisdictions), *content has improved or should remain* (commented on by 8 jurisdictions) and *manageability* (commented on by 8 jurisdictions). Most noted improvements to the introductory elements, content descriptions and elaborations, achievement standards, and alignment.

Several aspects of the revised Science curriculum were noted as improved, including Aboriginal and Torres Strait Islander perspectives and inquiry questions. The explicit inclusion of First Nations perspectives into the content descriptions and elaborations was positively received by jurisdictions. However, some noted that professional development and practical implementation support (e.g., resources) will be needed. Including inquiry questions was welcomed and valued by all. However, some jurisdictions felt the inquiry questions included are not always age appropriate.

Generally, jurisdictions appeared to agree that more decluttering is needed to achieve manageability, although 6 jurisdictions indicated that there are aspects of content that should be reinstated or added to the revised Science curriculum.

There was a pattern of queries around Science as a human endeavour. Some jurisdictions were satisfied with the revised form, others preferred the previous version, while still others felt more alignment is needed.

Some jurisdictions expressed the view that the cognitive demand/content in the revised curriculum is too high. Suggestions were made for reinstating or resequencing content in some year levels to be more age appropriate and reflect better development progression.

1.6 Summary and conclusions

The consultations were public and largely anonymous so that stakeholders with varying degrees of understanding of the curriculum, educational issues and the TOR of the Review could participate. Feedback about the revised Science curriculum, which was provided by stakeholders through the 3 channels of participation was of great variety in terms of the perceptions and opinions expressed as well as the extent, depth and detail that were involved in the feedback.

While the report abstains from identifying an 'authoritative voice' among the various individual and group respondents, there are some consistent patterns of feedback received through the 3 consultation channels:

There was overall support for the proposed revisions to the F-10 Australian Curriculum: Sciences.

There was strongest support for some of the introductory elements of the Sciences curriculum. In particular, the revision to the rationale was seen to make the importance of the learning area clearer and the revision to the aims was seen to reflect the major learning that students will demonstrate.

There was also support for some of the revisions made to curriculum elements. In particular, the refinements to the year level descriptions was seen to provide a clearer overview of learning at year levels. The open-ended survey feedback showed that this included support for the inclusion of inquiry questions, as well as a view that the content descriptions had improved clarity and specificity.

While there were aspects of the revised curriculum that were seen to have improved, various specific recommendations were made for further improvements to some introductory and curriculum elements. The open-ended survey feedback indicated that, of respondents who provided feedback on the introductory elements, the majority saw that further refinements were needed to the strands/sub-strands and core concepts.

Stakeholder feedback indicated that further review and refinement to some content elaborations was needed to ensure they provide helpful, authentic examples to teachers and clearly demonstrate connections with other learning areas.

Stakeholder feedback also indicated that further review of the content descriptions was needed to remove any ambiguity and give better guidance to teachers about what to teach.

Feedback about the amount of content as well as the low levels of agreement among respondents that the amount of content can be covered in each year are indications that there could be scope for further reducing content in the Australian Curriculum: Science.

Feedback also indicated to further review the content descriptions that have been consolidated and the aspects of some content descriptions that have been reallocated as there is a concern that revisions have not improved the sequencing of concepts or decluttered the content to make it more manageable to implement within the time allocated to the Australian Curriculum: Science. Concerns surrounding the resequencing of content in some year levels to be more age appropriate were noted such as in the Earth and Space science.

2. Introduction

2.1 Overview of the Review

On 12 June 2020, Australia's education ministers tasked ACARA to undertake a review of the Australian Curriculum from Foundation to Year 10 (the Review) to ensure it is still meeting the needs of students and providing clear guidance on what teachers need to teach. ACARA has worked in close consultation with the profession and key stakeholder groups to complete the Review. The Review looks over the existing 3 dimensions of the Australian Curriculum; that is, the 8 discipline-based learning areas, 5 general capabilities and 3 cross-curriculum priorities. To improve the F-10 Australian Curriculum, ACARA's broad aims are to refine, realign and declutter the content of the curriculum within its existing structure.

In preparing for the Review, ACARA considered the latest research and international developments, and consulted with practising teachers, curriculum experts, key academics and professional associations. It formed the Science Curriculum Reference Group and the Teacher Reference Group to provide advice and feedback, with members nominated by state and territory education authorities and non-government sectors. To reflect the focus on primary schools, ACARA further created the Primary (F–6) Curriculum Reference Group and the Teacher Reference Group, which helped give advice and feedback on how to improve the curriculum for the youngest students.

2.1 Proposed revisions to Science curriculum

From the research, teacher feedback and work with the reference groups, ACARA identified some key areas where the Science curriculum could be improved. The consultation version of the F-10 Australian Curriculum: Science includes the following proposed revisions:

- Core concepts have been developed for each of the strands, building on the core concepts that have always underpinned the science understanding strand.

- Content descriptions in science understanding and science as a human endeavour have been redesigned to be more explicit and to remove ambiguity.

- Content across science understanding has been resequenced to improve the conceptual sequence within each sub-strand and to balance content across the year levels; some content descriptions have been moved between year levels and some have been consolidated.

- The number of science understanding content descriptions across the primary years has been reduced to enable teachers to explore content to a greater depth and focus on integrating the 3 strands.

- The science inquiry content has been refined to more clearly articulate progression and differentiate between band levels, and intercultural inquiry skills content has been added.

- The science as a human endeavour strand has been refined to emphasise how scientists engage in inquiry so that students are supported to connect their own science inquiry practices with those of scientists.

- The elaborations have been redesigned to provide more diverse and detailed illustrations of approaches to teaching the content descriptions, and inquiry questions have been added to the year level overviews to support the curriculum's focus on inquiry.

2.2 Stakeholder consultation

As part of the Review, ACARA invited public feedback on its proposed revisions to the Australian Curriculum. There were 3 channels in which feedback was received.

2.2.1 Online survey

The main vehicle through which the public participated in the consultation was an anonymous online survey, which was set up in Survey Monkey and administered by ACARA. The survey captured stakeholder

demographics, organisational details and perceptions on the proposed revisions to the introductory sections (rationales, aims, organisational structure, key connections and key considerations), curriculum content (year level descriptions, achievement standards, content descriptions and content elaborations) and sought overall feedback in relation to the proposed revisions within the scope of the review (an outline of the questionnaire is given in attachment A). One of the statements was "The amount of content can be covered in each year". Respondents who disagreed or strongly disagreed with the statement were asked an open-ended question about what content should be removed or what revisions were needed to make the amount of content more manageable. All survey respondents could also leave open-ended feedback of a general nature as well as open-ended feedback that was year-level specific.

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2.1.1   Email submissions

A second channel for the public to provide feedback on the proposed revisions to the Australia Curriculum was via written feedback by email to engagement@acara.edu.au.

2.1.2   Jurisdictional feedback

The state and territory education authorities and national non-government sectors were separately invited to provide their jurisdiction feedback in written form. In these cases, the invitations were accompanied by guidelines that reflected the online survey structure.

2.1.3   Consultation details

The consultation period ran over 10 weeks between 29 April and 8 July 2021. Relevant materials outlining the proposed changes to elements of the Australian Curriculum and the associated reasons for them were also made available on ACARA's purpose-built consultation website during that time. Stakeholders were encouraged to consider these materials prior to, or while, responding to the survey questions or providing feedback by email.

Participation in the online survey was anonymous for individual respondents. Groups who participated in the online survey were asked to provide the name of the organisation they represented. Feedback received via email submissions sometimes contained information about the identity of the participant. Individual details were removed by ACARA prior to being provided to ISSR, while information related to a group or organisation was retained and shared with ISSR.

The public and largely anonymous character of the consultations allowed people and organisations with various understandings of the curriculum and the proposed changes to the curriculum to participate in the consultations. Some aspects of the Review received national media attention at the time of the consultation period, which may have stimulated participation by particular groups.

2.2 This report

2.2.1   Purpose of report

During the consultation period, qualitative and quantitative data were gathered in relation to various elements of the Australian Curriculum and various year levels. Some of the feedback was very detailed in talking about the Australian Curriculum, the proposed changes, and/or suggestions for further improvement to the Australian Curriculum. All feedback, including detailed and extensive submissions, has been read and considered by the ACARA review team in further revising the Australian Curriculum.

ISSR has been contracted by ACARA to undertake an independent analysis of the qualitative and quantitative data. The purpose of this report is to provide a high-level analysis of the feedback collected to support ACARA personnel to make recommendations about refinements to the curriculum.

The key interests of this report lie in:

- understanding the profile of stakeholders who participated in the consultations for Science;

- understanding the level of stakeholder agreement and disagreement with different elements of the revised Science curriculum;

- identifying the areas of the revised Science curriculum that stakeholders perceive most positively and those deemed in need of further refinement;

- gauging stakeholder perceptions about whether the Review achieved its overall objectives within the terms of its reference; and

- highlighting the potential similarities and differences in the above based on the level of the curriculum (F-6, Y7-10 and F-10) and stakeholder demographics.

2.2.2   Structure of report

The following section (3) describes the treatment of data captured through the different consultation channels, and the methods of analysis and presentation. Section 4 presents information on participating stakeholders before results from the consultation are shown in Sections 5, 6 and 7. The structure of presenting the results follows the structure of the 3 channels of participation – survey results are included in Section 5, feedback from the open email submissions in Section 6 and feedback from jurisdictional submissions in Section 7.

3. Data processing, analysis and presentation

3.1 Data transfer

ACARA provided responses to the survey and those received via email to ISSR through a secure project folder in the ACARA cloud. Responses from the survey were only included when they had been completed, which required the participant to continue to the final page. The final page was determined by the selections made by the respondent. ACARA also provided ISSR with the written jurisdiction feedback and the received email submissions. The latter included 42 template emails – emails with identical or largely identical wording in relation to a particular issue.

Individual feedback received via emails was de-identified by ACARA prior to making it available to ISSR. Identification of organisations among email submissions was maintained so that the participating organisations could be listed in the reporting. Jurisdictional feedback also remained identifiable for documentation in the reporting.

3.2 Data cleaning – survey data

All quantitative questions had been set up as compulsory in Survey Monkey and the resulting data overwhelmingly adhered to the pre-given questionnaire structure and response formats so that minimal data cleaning was required. In a few cases participants had information recorded as an individual as well as a group respondent. This could occur where respondents identified as either of the 2 and then later went back to the relevant survey page and changed their response to the respectively other respondent type, which triggered a trajectory that captured more information on either the individual or group characteristics of the respondent. Each of these cases was scrutinised and the information retained that most likely reflected the stakeholder type based on the information provided. For example, a record that indicated an individual respondent who was a primary school teacher in a Government school in a metropolitan area, and that also indicated a group response for a Government school in a metropolitan area that represented one person was determined to be the former and the latter information was deleted from the cleaned dataset.

Leading and trailing blanks were removed from open-ended responses to prepare the textual data for coding while all content of such responses was retained as it had been given.

3.3 Coding of open-ended responses

3.3.1 Developing code frame

ISSR in consultation with ACARA developed a code frame that defined the themes and subthemes that emerge from the open-ended responses and established rules for coding such open-ended responses to those themes and subthemes. The code frame was developed in 3 steps.

Step 1 - Scrutinising the survey questions developed, and associated materials, for key themes and categories

Prior to receiving any survey responses, 2 qualitative researchers scrutinised the proposed curriculum changes, along with the survey questionnaires, to provide an initial outline of the themes they expected to see in the data. This outline was updated iteratively as the analysis in Step 2 and 3 continued.

Step 2 - Inductive analysis of interim responses

Inductive analysis commenced once the first survey data became available. Once the survey responses were received, the qualitative researchers read through the open-ended feedback and familiarised themselves with the data. Together, they then generated themes that were linked to the data set and began coding the data without reference to the outline of themes developed in Step 1. This approach enabled the researchers to be open to new patterns in the data and to make revisions to the draft outline of the code frame.

Step 3 - Content analysis of interim responses

Content analysis was then employed. The 2 researchers coded a portion of the data independently using the developed draft code frame. They then met to discuss commonalities or differences in coding the data, until agreement was reached. In this activity, the researchers noted nuances in themes across learning areas, cross-curriculum priorities and general capabilities and the code frame underwent a revision to incorporate these nuances.

The code frame was then examined against a sample of later arriving email submissions as well as some of the jurisdictional and national sector peak body feedback which established that the developed codes/themes also largely applied to feedback received through these channels. During all steps ISSR consulted ACARA staff who sense checked the evolving code frame and who provided inputs into its evolution.

3.3.2 Coding

Open-ended responses from 3 survey fields were then coded according to the developed code frame. This concerned responses to the question "What content should be removed or what revisions are needed to make the content more manageable?" This question was asked when respondents disagreed or strongly disagreed with the preceding statement "The amount of content can be covered in each year". The other 2 open-ended fields could be used by all respondents. One prompted the respondents to provide comments about general aspects of the revised curriculum that have improved and the other prompted them to provide comments about general aspects of the revised curriculum that needed further improvement (for the survey questions see Appendix A).

In addition, respondents were also asked whether they wanted to provide open-ended feedback for individual year/band levels, and if that was the case, which year/band levels this concerned. Respondents who indicated they wanted to provide such specific feedback were presented with the same 2 prompts for each year/band level that they had selected. Both the feedback captured under the more general prompts as well as feedback captured in the year-level specific fields have been considered by ACARA in revising the Science curriculum post consultation. However, the year-level specific feedback was deemed as too specific to be included in high-level reporting and was not coded to themes.

Consistent with the treatment of open-ended responses captured through the online questionnaire, written feedback received via emails (including the template emails) was coded on the basis of the code frame while year-level specific feedback coming through this channel has been considered by ACARA without it being coded to themes for the reporting here. The coding of jurisdictional feedback was undertaken in a similar way.

Open-ended feedback expressed by the same individual or group/organisation could contain multiple themes. In this case the different themes were coded to the same stakeholder record.

3.4 Data analysis and presentation of results

3.4.1 Information captured from the 3 channels for providing feedback

The 3 channels of providing feedback were associated with methodological differences. Survey participants adhered to a pre-given structure consisting of closed questions seeking agreement ratings and prompting for open-ended feedback of a general or year/band level specific nature. The survey also captured demographic characteristics of respondents including type of stakeholder, state/territory, school sector and remoteness of school. This allowed treating this data like any other survey data by calculating descriptive statistics such as frequencies, percentages and breaking down results by respondent characteristics and by presenting the descriptive statistics in tables or graphs.

In most cases, the email submissions did not adhere to the structure and prompts of the survey. They constituted unprompted, mostly open-ended feedback that sometimes came with additional materials attached. In some cases, many emails had identical, or largely identical wording (template emails). While some submissions contained some information about the stakeholder, such as profession or organisation

name, the demographic characteristics that were systematically captured in the survey were largely not provided as part of the email submissions. The analysis of information from the email submissions therefore focuses on the themes and subthemes that emerged without assessing stakeholder differences.

Eight jurisdictional education authorities and 2 national sector peak bodies were explicitly invited to participate in the consultations and were given guidelines for their participation. These guidelines reflected the structure and content of the online survey. However, the degree to which jurisdictions adhered to these guidelines varied and feedback was overwhelmingly of an open-ended nature. As was the case with some of the email submissions, the feedback received from the jurisdictions tended to be comprehensive.

To further take account of the methodological differences between the 3 consultation channels, feedback received through each channel is reported in a separate section.

3.4.2   Reporting of online survey data

The reporting of feedback is preceded by information on participating stakeholders to aid interpretation of the overall results. This information includes the level of the curriculum that was selected by respondents, their respondent type (e.g. teacher, parent, academic), the state or territory they were based in, and, for respondents who identified as teachers, school leaders, parents, students and schools, the school sector and remoteness area of the relevant schools.

Overall results on the 23 questions are presented as stacked bar charts that show the percentage breakdown across the 5 response categories (strongly agree, agree, disagree, strongly disagree, don't know). Across the 5 categories, responses add up to 100%.

Unless indicated otherwise, the prevalence of themes expressed by stakeholders in open-ended comments is reported as a percentage based on the total number of respondents (e.g., 11% of survey respondents expressed theme A). Where the same respondent expressed multiple themes the respondent was included in the percentages for each of the reported themes. The number of respondents who provided open-ended feedback is also reported.

Differences between stakeholder groups are explored via bar charts that show the percentage of the combined strongly agree/agree responses for different stakeholder categories. This percentage is referred to as the *level of agreement* in the report. The level of agreement is expressed as a proportion of all respondents including those who selected the 'don't know' option. Stakeholder categories are considered in such comparisons when they have 30 or more respondents. Stakeholder group dimensions considered in the analysis of group differences are type (e.g. teacher, academic, parent), state or territory, school sector and school location.

Potential differences between stakeholders who responded to different levels of the revised curriculum (F-6 6, 7-10 and F-10) are also assessed by comparing the relevant percentages of the combined strongly agree/agree responses.

Percentages are rounded and may not exactly add up to 100% in tables or graphs. The original survey statements were abbreviated to 80 characters in the graphs to ensure readability. Appendix B documents which survey statements were abbreviated in which way for the reporting.

3.4.3   Reporting of email submissions

The reporting of email submissions consists of identifying the key themes that emerged after coding, based on the proportion of respondents who expressed the themes and subthemes. This is accompanied by drawing out examples that reflect different dimensions or aspects within a theme. Particular attention was given to drawing upon examples that represent the nuance within the data, especially within the subthemes that include learning area specific detail. Further, attention was given to drawing upon examples to illustrate dominant or leading sub themes, defined by being discussed by a relatively large number of respondents. While the reporting of the survey data makes use of percentage breakdowns to explore differences between stakeholder groups (where possible), the analysis of data from email submissions summarises general

trends and themes from the feedback. This takes account of the unstructured way the information was provided across the many submissions.

3.4.4 Reporting of jurisdictional feedback

The reporting of jurisdictional submissions consists of identifying the key themes that emerged after coding, based on the proportion of jurisdictional respondents offering feedback on the themes and subthemes. This is accompanied by direct quotes that reflect different dimensions or aspects within a theme. Particular attention was given to drawing out examples that represent nuance within the data. Attention was also given to providing examples that illustrate leading themes and sub themes, identified by the amount of feedback received in relation to themes and sub themes.

Additionally, the invited jurisdictions were encouraged to respond to the 6 survey statements from the Overall feedback section of the survey. Five of the 9 participating jurisdictions (Tasmania, Queensland, Western Australia, Northern Territory and Independent Schools Australia) provided responses to these questions. Analysis of data from jurisdictional submissions thus summarises general trends and themes from the qualitative feedback, synthesising this with feedback from the five jurisdictions who responded to the 6 survey statements.

A summary of positive feedback and aspects that need further attention, as identified by each jurisdiction, are included as Appendix G.

3.4.5 Multiple participations

The consultations were open to the public without imposing protocols that confirmed the identity of participants or that participants submitted their feedback only once. Based on the names of organisations captured in the survey and those self-reported in email submissions, it is apparent that some organisations have completed the on-line survey as well as provided an email submission in relation to the same learning area, subject, general capability or cross-curriculum priority. It also appears that in some cases the same organisation submitted multiple survey responses for the same element of the curriculum. In some cases, state-based affiliate organisations provided feedback that was separate and additional to the feedback provided by their national parent organisations, which presented the consolidated feedback of that organisation. It is further possible that individuals participated multiple times for the same element by completing more than one survey (using different computers), by completing a survey as well as providing an email response or by providing multiple email submissions. The extent to which individuals and organisations participated in the consultation about the particular elements of the Australian Curriculum multiple times cannot be determined, also because the survey relied on self-reported stakeholder characteristics, which may not always have been accurately provided. Multiple participations could have particularly influenced the consultation results where the number of participants was low.

3.4.6 Interpretation of results

The consultation process used different channels of capturing feedback, which was associated with methodological differences noted in Section 3.4.1. The overall character of the consultation was public, and it was anonymous for participating individuals. In principle, everyone could participate regardless of their relation to, and their understanding of, the Australian Curriculum or the TOR of the Review. The Review attracted media attention, and template emails (with identical wording) received during the consultation period indicate some mobilisation of particular stakeholder networks. It is possible that in some cases the same individual or organisation expressed their voice more than once in relation to the same elements of the Australian Curriculum that was in scope of the Review. Results of the consultation included in this report should be seen in this context. They report perceptions captured through different channels in the consultation process without assuming that these are representative of relevant stakeholder groups. They present perceptions as they were conveyed by stakeholders without qualifying them against the proposed revisions to the curriculum and without making assessments about their professional or other value.

4. Stakeholder participation and profile

4.1 Overall response

Table 1 shows the number of times the online survey was completed, the number of email submissions received, and the number of jurisdictional stakeholders who provided written feedback. The online survey was completed 479 times, 114 emails, 114 email submissions were received and 9 of the 10 invited jurisdictions and national sector peak bodies returned feedback on the revised Science curriculum.

Table 1: Number of participations, Science consultations

	n
Online survey	479
Email submissions	114^
Jurisdictional feedback	9

^ The number of received emails included 42 template emails – emails with identical wording.
For more detail on email submissions see Section 4.2.2. For more detail on jurisdictional submissions see Section 4.2.3.

Reporting of stakeholder feedback is undertaken on the basis of a learning area, general capability or cross-curriculum priority. In some cases, email submissions were of a general nature and could not be allocated to a specific learning area, general capability or cross-curriculum priority. These were mainly concerned with general comments around values or virtues that should be taught, the extent to which the curriculum content was inclusive of diverse student needs, evidence-based, decluttered and age-appropriate. Some of these emails had a focus on play-based learning in early years.

There were 108 of those submissions and while their content does not fit into any of the learning area, cross-curriculum priority or general capability specific reports, they have all been considered by ACARA in further refining the Australian Curriculum.

4.2 Stakeholder profile

4.2.1 Survey respondents

Table 2 shows the types of stakeholders who completed the online survey as an individual or as a group. More than half (55%) of survey respondents were teachers. Schools (16%) and school leaders (9%) were the next largest types of respondents. These 3 respondent groups constituted 80% of all survey respondents.

Of the 263 teachers, equal numbers (n=124) identified as primary school and secondary school teachers and 15 identified as F-12 teachers.

Table 2: Type of survey respondent, Science survey

Type of respondent	n	Percent
Individual respondent		
Teacher	263	54.9%
School leader	43	9.0%
Academic	18	3.8%
Parent	24	5.0%
Student	3	0.6%
Employer/business	3	0.6%
Other - Individual	32	6.7%
Group respondent^		
School	76	15.9%
Professional association	5	1.0%
University faculty	1	0.2%
Education authority	7	1.5%
Other - Group	4	0.8%
Total	**479**	**100.0%**

^ A list of participating groups (other than schools), which self-identified in the survey is provided in Appendix D.

About 42% of survey respondents gave feedback on the F-6 curriculum, 38% on the Y7-10 curriculum and 20% on the F-10 curriculum (Figure 1).

Figure 1: Level of curriculum selected, Science survey respondents
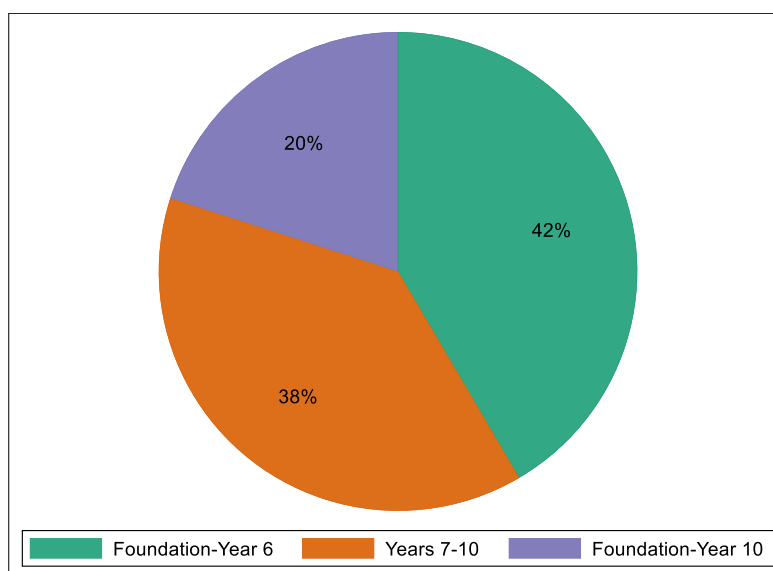
Figure 2 shows the distribution of Science survey respondents among the states and territories of Australia. Queensland had the largest representation of survey respondents, with 47% of respondents based in that state. In relation to state and territory populations, respondents from Queensland over-represented their state by almost 2 and a half times (47% of all respondents versus 20% of Australia's population share[2]). Based on jurisdictional shares in the national population, the 2 largest states, New South Wales and Victoria, were particularly under-represented among survey respondents.

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[2] Source: Australian Bureau of Statistics, National, state and territory population December 2020.

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AUSTRALIA

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Figure 2: Science survey respondents by states and territories
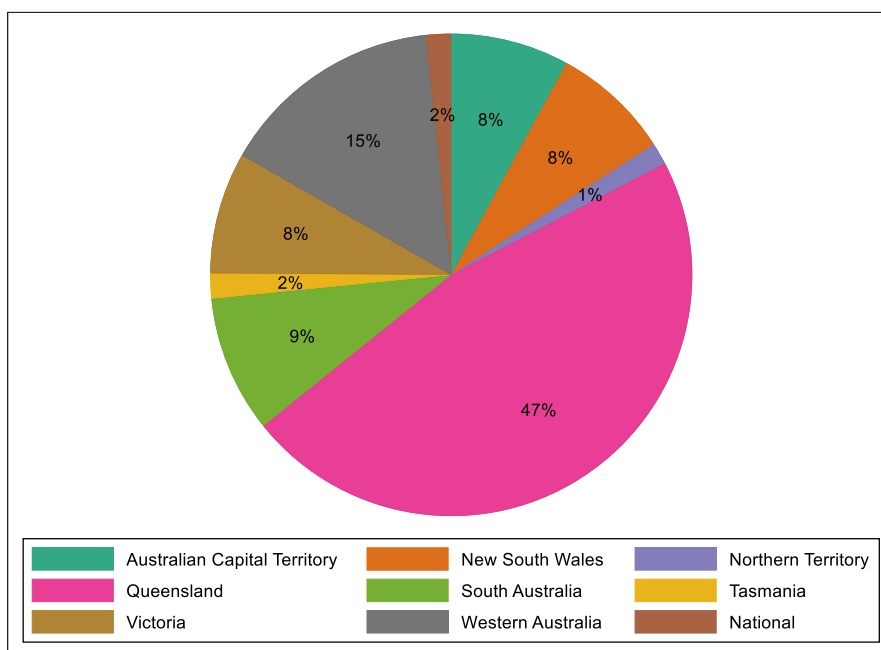
Respondents who identified as a teacher, school leader, school, student or parent were asked in which sector their (child's) school was and in which remoteness area it was located. About 58% of these respondents indicated a Government school, 15% indicated a Catholic school and 24% an Independent school (Figure 3).

*Figure 3: School sector and remoteness area, Science survey respondents^*
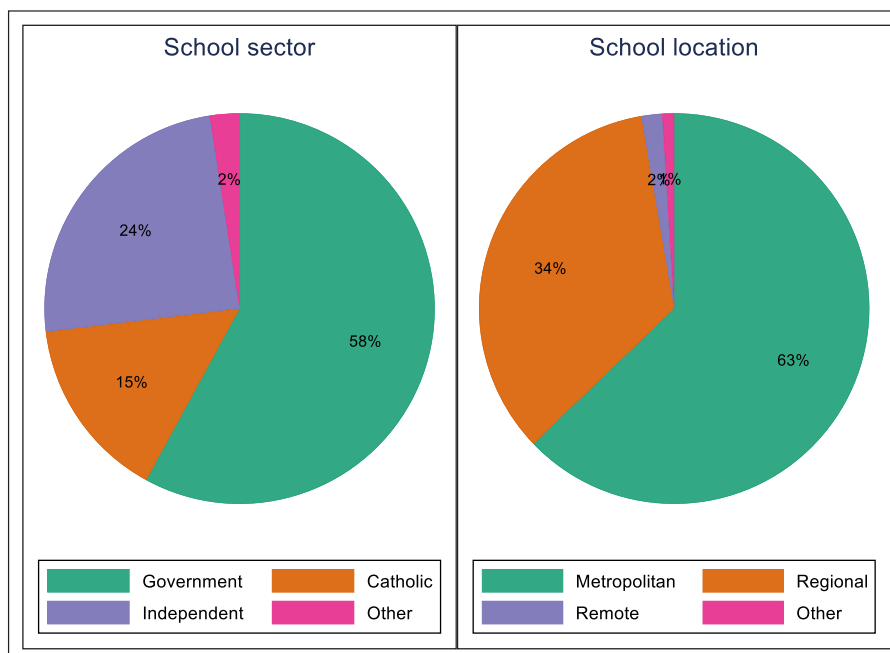
^ Teachers, school leaders, students, parents and schools.
'Other' responses in the pie charts relate to staff who worked across schools, parents who had children in multiple schools and, in the case of school sector, also to TAFE and University students.

As a point of reference, the student enrolment distributions in 2020 were these: 66% of students were enrolled in Government schools, 19% in Catholic schools and 15% in Independent schools[3].

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[3] ABS 2021, Schools, Australia 2020. https://www.abs.gov.au/statistics/people/education/schools/latest-release#key-statistics.

Figure 3 also shows in which remoteness area their (child's) school was located. About 63% indicated their school's location as metropolitan, 34% as regional and 2% as remote. Based on student enrolment distributions in 2020 (72% of students were enrolled in major cities, 26% in regional areas and 2% in remote areas[4]), regional areas are somewhat over-represented among Science survey respondents.

4.2.2   Email submissions

While demographic data were not systematically collected from respondents making email submissions, a number of respondents from the 114 submissions had self-disclosed their position and/or affiliation, making it possible to summarise some of the demographic characteristics of respondents. However, the majority could not be categorised into a stakeholder group, due to insufficient description (Table 3). These were largely senders of template emails – emails with identical or largely identical text about the role of evolution and creation (see Section 6). The remainder represented some form of association or body. A further 12 submissions were made by teachers, including 4 groups of teachers. An additional 15 self-described as parents, or from the community.

A list of organisations which self-identified in email submissions across all learning areas, general capabilities and cross-curriculum priorities is provided in Appendix D.

Table 3. Type of stakeholder, Science email submissions

Type of Stakeholder	Number of email submissions	Percentage
Teachers or schools	12	10.5%
Association or body	28	24.6%
Academics or experts	6	5.3%
Parent or community member	15	13.2%
Unclear	53^	46.5%
Total	**114**	**100%**

^ This included 42 template emails.

4.2.3   Jurisdictional feedback

Submissions were invited from each state and territory as well as the 2 national sector peak bodies. Nine submissions were received in total: Queensland, New South Wales, Victoria, Western Australia, South Australia, Tasmania, the Northern Territory, Independent Schools Australia, and the National Catholic Education Commission. The Australian Capital Territory abstained from providing feedback at this point while noting its contributions to the Review via working groups, individual submissions, regular meetings and trial schools.

The jurisdictions were invited to respond using a pre-defined template that aligned with the online survey that was publicly available, although this template was not always followed. Of the 9 jurisdictions who submitted feedback on the revised English curriculum, Western Australia and Queensland provided extensive and detailed feedback. South Australia, Victoria, Independent Schools Australia (ISA), and the National Catholic Education Commission (NCEC) provided substantial specific feedback. New South Wales some feedback in relation to the concept of scientific inquiry. Tasmania and the Northern Territory provided broad feedback.

Jurisdictions used a variety of methods to generate feedback from their stakeholders, such as learning area focus groups, forums, and webinars. Examples of stakeholders include state and independent schooling sectors, and professional associations.

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[4] Source as above.

4.2.4   Stakeholder summary and implications for overall results

Of the 479 completed surveys, 55% were submitted by teachers and 47% of stakeholders resided in Queensland. The overall survey results are therefore notably influenced by teachers and respondents who were based in Queensland.

Overall results are further largely influenced by respondents who are linked to Government schools and metropolitan areas. However, the proportion of Government school and metropolitan respondents in the survey is still below that of the school student population in these schools and areas.

There was a fairly even distribution between respondents who addressed the primary school curriculum and respondents who addressed the secondary level of the curriculum. 42% of survey respondents participated in relation to the F-6 curriculum compared with 38% who gave feedback on the secondary Y7-10 levels of the curriculum and the remaining respondents (20%) commenting on the F-10 curriculum.

Table 4: Most prevalent respondent characteristics, Science survey respondents

Respondent dimension	Category	n	Percent of all survey completions
Level of curriculum	F-6	199	42%
State/territory	Queensland	224	47%
Type of respondent	Teacher	263	55%
School sector^	Government	237	49%
School location^	Metropolitan	257	54%

^This information was only captured from participating teachers, school leaders, schools, parents and students while the percentage in the last column is based on all respondents.

Email submissions were received from a wide range of stakeholders/stakeholder groups with various perspectives and interests. Among them were teachers, academics, professional associations and parents. However, it is not possible to quantify any of their characteristics analogous to those of survey respondents as this information was not systematically provided as part of the email submissions. There were 42 template emails, which included identical text.

Jurisdictional formal submissions were received from 7 of the 8 invited jurisdictions and 2 national sector peak bodies, which represent the Independent and Catholic school sectors. The feedback included in jurisdictional submissions, to varying degrees, reflects consultations with educational departments, professional groups, such as teachers and school leaders, and, at times, the Catholic and Independent school associations within the respective jurisdictions.

5. Survey results

Results reported in this section present perceptions as they were expressed by survey respondents. These perceptions are not qualified against the proposed revisions to the curriculum and they are not assessed for their professional or other value.

Overall survey results are dominated by respondents who self-identified as school professional staff – teachers, school leaders and schools constitute 80% of all respondents. Overall results are further shaped by respondents from Queensland who constituted nearly half of all respondents.

While some stakeholder details were captured during the survey, it is uncertain to which extent survey respondents are representative of stakeholder groups (e.g. to which extent participating teachers from Queensland are representative of teachers in Queensland).

5.1 Overall results

The general feedback part of the survey that sought respondent perceptions in relation to the curriculum/proposed changes to the curriculum contained 3 sections: Introductory elements, Curriculum elements and Overall feedback (see Appendix A). The presentation of the results focuses on feedback captured in these 3 sections and follows their structure.

The survey also captured feedback that was year-level specific. This feedback has been considered by ACARA in refining the Science curriculum. However, it is not reported here beyond the number of respondents who provided such detailed feedback.

5.1.1 Introductory elements

Respondents were presented with 8 statements in the Introductory elements section of the questionnaire and asked to give an agreement rating for each. These statements related to the rationale, the aims, the organisational structure, key connections and key considerations in the introductory sections of the Science curriculum. The results are reported in Figure 4.

Overall, between 66% and 81% of respondents agreed or strongly agreed with the presented statements. The level of agreement (strongly agreed and agreed) was highest for the first 2 statements: on the rationale being clear about the importance of the learning area (78%) and the aims identifying the major learnings that students need to demonstrate (81%). They were lowest for the statements that the key connections section identifies the key opportunities to connect with other learning areas (67%) and that the key considerations section provides important information for planning teaching and learning (66%)

Levels of disagreement ranged from 11% to 22% and were inversely related to levels of agreements. The prevalence of responding with 'don't know' was highest for the statements on key connections and key considerations, which may indicate less familiarity with these elements in the introductory section of the curriculum among respondents compared with the rationale, aims and organisational structure of the revised Science curriculum.

Figure 4: Introductory elements, Science survey respondents
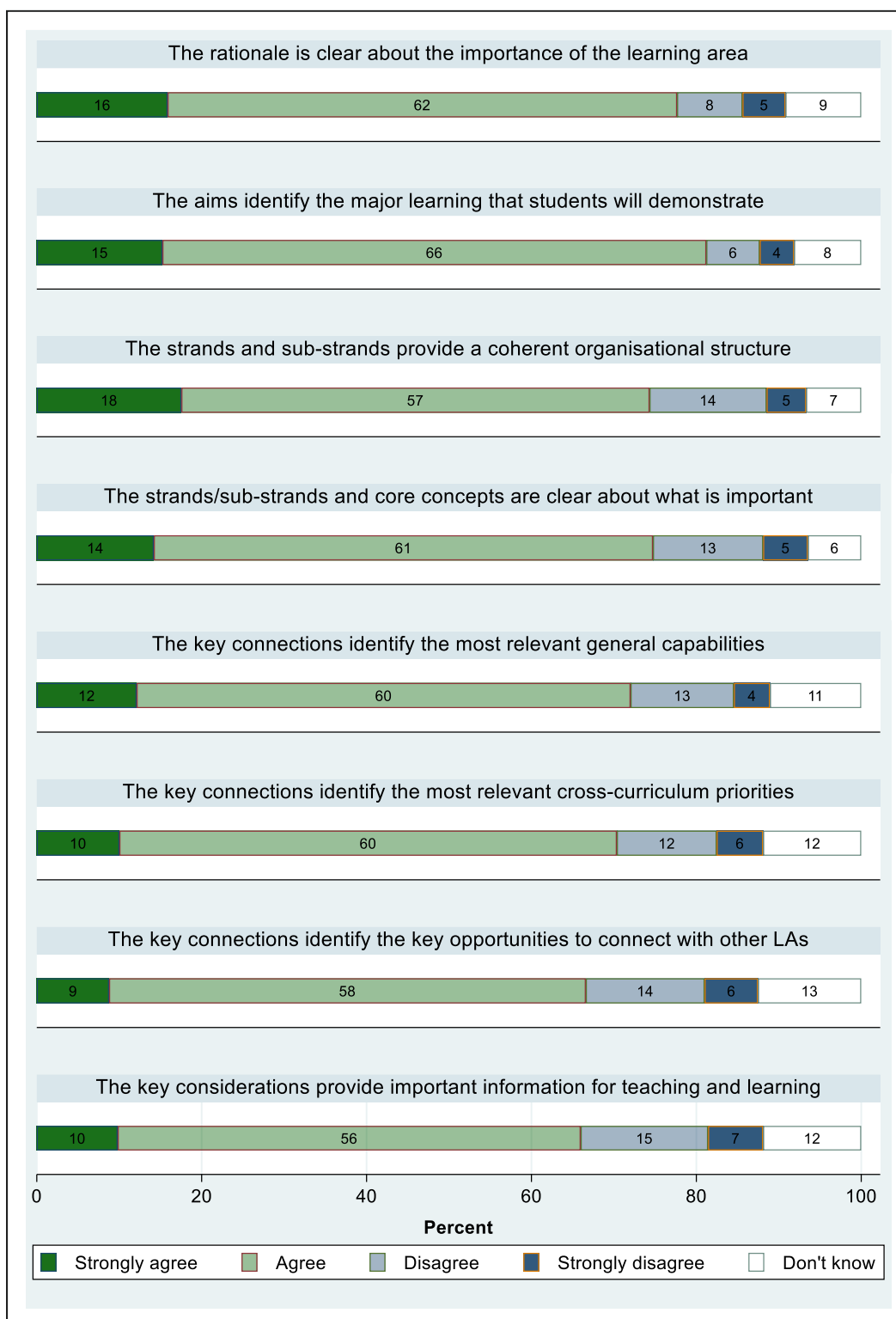
Percentages in the bars are rounded and may not add up to the % agreed and strongly agreed quoted in the text.

5.1.2   Curriculum elements

The next section in the questionnaire captured perceptions on 4 curriculum elements: year level descriptions, achievement standards, content descriptions and content elaborations. Overall, results for 8 of the questions in this section are shown in Figure 5. Between 59% and 77% of respondents agreed or strongly agreed, and between 18% and 32% disagreed or strongly disagreed with the presented statements.

Figure 5: Curriculum elements, Science survey respondents

Percentages in the bars are rounded and may not add up to the % agreed and strongly agreed quoted in the text.

Responses were most favourable in relation to the year level descriptions providing a clear overview of learning at year levels (77% agreement). The statements that the achievement standards clearly describe the quality of student learning (68%), that they adequately reflect a developmental progression (64%) and that they align with essential content that should be taught (66%) received lesser agreement. So did the 2 statements on the content descriptions: 68% of respondents agreed or strongly agreed that they specify the

essential knowledge, understanding and skills that should be learned, and 66% agreed or strongly agreed that they make it clear to teachers what should be taught .

Respondents were least likely to agree or strongly agree with the 2 propositions that the content elaborations provide useful illustrations and suggestions (62%) and that they provide a range of contexts for meaningfully integrating the general capabilities and cross-curriculum priorities (59%).

Respondents were also asked whether the amount of content could be covered in each year. Just over half (53%) of respondents agreed or strongly agreed while 49% disagreed or strongly disagreed (Figure 6).
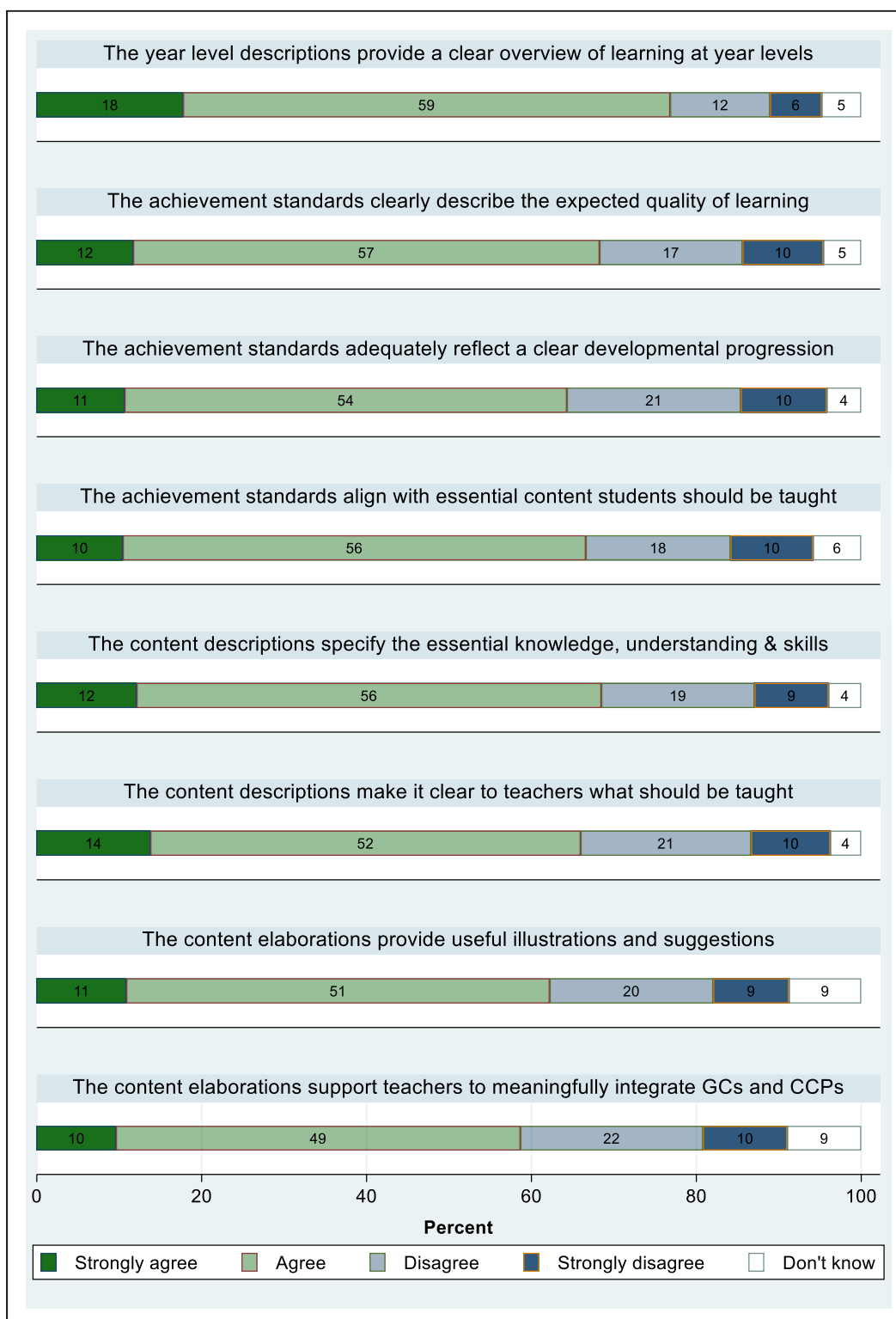
Figure 6: Amount of content, Science survey respondents

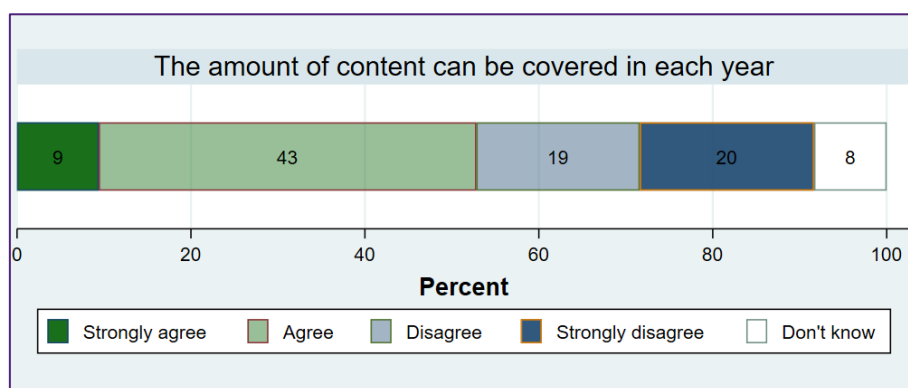Percentages in the bars are rounded and may not add up to the % agreed and strongly agreed quoted in the text.

The 49% of respondents who disagreed or strongly disagreed were asked a follow-up question to clarify what content should be removed or what revisions were needed to make the content more manageable. Of the 186 respondents who were asked this question, 152 (82%) provided a comment, and only 57 provided a specific recommendation as to what could be removed.

The 152 comments were coded according to the themes and subthemes covered in the code frame (Appendix C). While the question explicitly asked respondents what content should be removed or revised to make the content more manageable, 57 of the respondents were able to provide specific examples or ideas. Other respondents did not address this, but rather saw this as an opportunity to comment on any aspect of the curriculum.

Table 5 presents the 5 themes with their subthemes that emerged most strongly from feedback given by those 152 respondents. It is possible that a single response has utterances that span across multiple themes. As a result, a comment from a single respondent would be coded to more than one theme. Likewise, a single response could be coded to more than one subtheme.

As can been seen from the table, the 5 leading themes were: *content should be removed; introductory elements, manageability, sequencing of content* and *implementation (technically out of scope)*.

The leading theme was *Content should be removed*, which applied to 83 respondents. It is not unexpected that this was the leading theme, given the question prompt. Over half of those respondents provided various, but specific examples or ideas of content to remove as reflected in the next quotes.

> *"Biological Science - Biomass pyramids possibly too complicated for Year 7 Biological Science - Feedback mechanisms for Year 9 too detailed Earth Science - Consider linking geological formation back to rocks, which would be too complicated to have in Year 6, consider bringing the rock cycle back into Year 8 Physical Science - content quite detailed in Year 9 - too much cover? Chemical Science - remove radioactivity in Year 9 - this is a nuclear process not a chemical process."* (School leader – Secondary, Western Australia, Independent, Metropolitan).

> *"Am concerned about the ethics of teaching disorder of cells to this year level. What would 'including timescales' look like for Year 8 physical sciences? I would like to see it removed. Year 9 still has too much biological science."* (Secondary teacher, Queensland, Independent, Metropolitan).

Table 5: Content that should be removed or revisions needed to make content more manageable (top 5 themes), Science survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Content should be removed	**83**	**17.3%**
General views that there is content that should be removed	34	7.1%
Content should be removed as it is not aligned with rationale/aim of learning area	7	1.5%
Content should be removed that is not aligned with who we want our children to become (e.g., confident, knowledgeable, skilled)	13	2.7%
There is too much emphasis on Indigenous cultures and perspectives	6	1.3%
Various other LA specific content that should be removed	43	9.0%
Introductory elements	**45**	**9.4%**
The rationale/aims have improved	1	0.2%
The rationale/aims need further improvement	7	1.5%
The strand/sub-strands/core concepts have improved	1	0.2%
The strand/sub-strands/core concepts need further improvement	31	6.5%
The key connections have improved	0	0.0%
The key connections need further improvement	18	3.8%
Manageability (amount of content)	**45**	**9.4%**
Decluttering of content evidence, the amount of content is more manageable	0	0.0%
Still too much content/further decluttering needed	45	9.4%
Sequencing of content	**40**	**8.4%**
The sequencing of content has improved	0	0.0%
The sequencing of content needs further improvement	40	8.4%
Implementation (out of scope)	**39**	**8.1%**
Pedagogy - this overarching theme encompasses feedback about how children should be taught	25	5.2%
Assessment - this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents.	7	1.5%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	10	2.1%

Comments were provided by 152 respondents. Percentages are based on all 479 Science survey respondents. All theme and subtheme categories that emerged from this comment box are shown in Table E1 in Appendix E.

Other examples of suggestions include the removal feedback mechanisms, types of life cycles, and radioactivity. The reasons for these views were varied but respondents often indicated that content is too complicated, too detailed, too many, or too time consuming to assess.

A large proportion of respondents who provided feedback in this theme simply stated there was too much content with a general suggestion to remove content, without providing specific recommendations as to what should be removed.

> *"Consider the amount of content that is being asked to be covered in Year 5 and Year 6. Year 2 also needs considered with the additional things added and the content to be covered." (Primary teacher, Queensland, Government, Metropolitan).*

The second largest number of comments related to the *introductory elements*. In particular, respondents who wrote about the introductory elements more often provided feedback that was captured in the subtheme, *strands/sub-strands/core concepts need further improvement*.

In particular, there was suggestions for further revision of the strand of Science as a human endeavour.

"Science as a human endeavour is still an unclear strand, with little guidance on how to teach it in an engaging way. More is needed here - if this strand is not necessary, it should be removed. If it is necessary, guidance on how to better integrate it into scientific learning is needed. I would personally like to see Science as a human endeavour reshaped and redesigned - perhaps more as an exploration into ethics, as developing the ability to think critically and ethically about scientific advancement will be integral for our society moving forward." (F-12 teacher, Victoria, Independent, Metropolitan).

There were also concerns about the proposed revisions to the Earth and Space Science sub-strand which had moved content to Year 6 from high school. This was perceived as an undesirable change.

"The particularly significant changes made to the Earth and Space Science sub-strand should NOT all go ahead. In particular: The proposed Year 6 content about rocks and the rock cycle must be retained in high school (Year 8) when the concepts involved can be to sufficient depth to support later earth science learning." (Other – Individual, Australian Capital Territory).

The third leading theme from comments prompted about the question about whether the amount of content could be covered in each year, related to *manageability*. Again, this was not unexpected given the question prompt. The dominant feedback pattern within this them, as evidenced by the number of responses presented in Table 5 was that further revision were needed to declutter the content to make it more manageable to implement within the time allocated to Science. There was a repeated sentiment that too much content detracted from the quality of teaching and consolidation of learnings.

"The number of things needed to be covered is too much. It needs to be reviewed and only essential content needs to be covered. There is too much teaching one thing with the expectation of teaching something else at the same time. With a lighter curriculum, the curriculum that is lighter will allow for more time for quality teaching and ensures students have time to learn it. Currently, students will be exposed and there will be no time to reinforce and revise properly without another essential learning area losing time. Too much content, not enough quality." (*Primary teacher, Queensland, Government, Regional).*

Some respondents saw that within this learning area, content has just been reorganised, content descriptions combined and reallocated to different year levels.

"Synthesising a content descriptor from several year levels into one descriptor (eg Year 2, 3, 4 into Biological sciences Year 2) or placing content from secondary into primary (eg Year 3 water cycle, Year 6 rock cycle) may look like a reduction in content, but it places significant extra demand on students and teachers." (Other – Individual, South Australia).

However, it should be noted that whilst a number of respondents perceived aspects unmanageable, this sometimes related to the Australia curriculum more broadly, rather than the learning area of Science specifically. In addition, some of the same respondents who commented on manageability simultaneously commented on aspects of the Science curriculum that they saw as improved or approved.

"The inclusion of all the general capabilities, core concepts and key ideas are adding layers of complexity to the teaching and learning requirements. Year level descriptions and achievement standards appear to be quite manageable in themselves but it is the added layers that makes the subject unmanageable." (School, Queensland, Government, Metropolitan).

The 4th dominant theme related to *sequencing of content.* However, whilst it was within the top 5 themes, it should be noted that overall this captured only a relatively small number of respondent comments.

The feedback within this main theme was related to concerns about the sequencing of content needing further improvements. This was the case for the F-2 where respondents sometimes saw that the proposed revisions did not enable the scaffolding of learning and building upon foundational knowledge. The placement of rocks and rock cycle in Years 6 (and moved from Year 8) was again evident in concerns about sequencing of content.

"We raise the below concerns and make recommendations where possible: 1. The removal of particular content from Year levels is concerning as the conceptual ideas may not be built on for over a year, depending on when the concepts are taught within the year. For example, there is no earth science in Foundation, no chemistry in Year 1, no earth science in Year 2 and no biology in Year 3. The daily and seasonal changes in foundation is developmental and builds upon the early years, therefore the merging with observable changes in Year One seems to skip a logical progression. Again, with the rock cycle moving from Year 8 to Year 6 is a big jump. The teaching of complex ideas such as particle movement in Year 5 may lead to confusion if it is not well understood and broken down by the teachers." (University faculty, Victoria).

"Moving the rock cycle back to the high school curriculum and placing seasons and tides in Year 6 provides better curriculum continuity for both Year 5 and Year 8." (School, Western Australia, Government, Metropolitan)

In addition to comments about the rocks and rock cycle being retailed in high school, rather than moving to Year 6, were comments about the placement of plate tectonics.

"Plate tectonics should be taught in Year 9 or 10. This is a summative big idea in Earth Science and students in Year 8 do not have sufficient prior knowledge. The carbon cycle is taught with global systems and the greenhouse effect, either in Year 9 or 10. Consider changes to the Year 10 Earth and Space Science content to move some to Year 9." (Other – Individual, Australian Capital Territory).

The final theme was related to implementation. Comments that were written about the challenges around resourcing in schools, the capability and expertise of teachers to deliver the relevant content as well as issues around pedagogy and assessment practices in school were technically out of scope of the terms of reference of the consultation. However, as a number of respondents provided a commentary, these comments were captured under a theme of *implementation*.

In relation to Science, there was some discussion by respondents that if moving some of what was seen as more advanced or technical content from secondary school into primary school, then the primary teachers may not have sufficient expertise or capability to deliver this content, as described below.

"The proposed Year 6 content about rocks and the rock cycle must be retained in high school (Year 8) when the concepts involved can be to sufficient depth to support later earth science learning. Primary teachers are ill-equipped to undertake this teaching." (Other – Individual, Australian Capital Territory).

Within this theme, there were some other comments related to the methods and practices of teaching some of the content, particularly if content was moved into the earlier years.

5.1.3   Overall feedback

In the Overall feedback section respondents were asked whether they thought the quality of achievement standards, content descriptions and content elaborations had been improved, whether the curriculum content had been refined, realigned and decluttered and whether the revised Australian Curriculum: Science was an improvement on the current version. These questions directly related to the TOR of the Review and what it set out to achieve.

Figure 7: Overall feedback, Science survey respondents
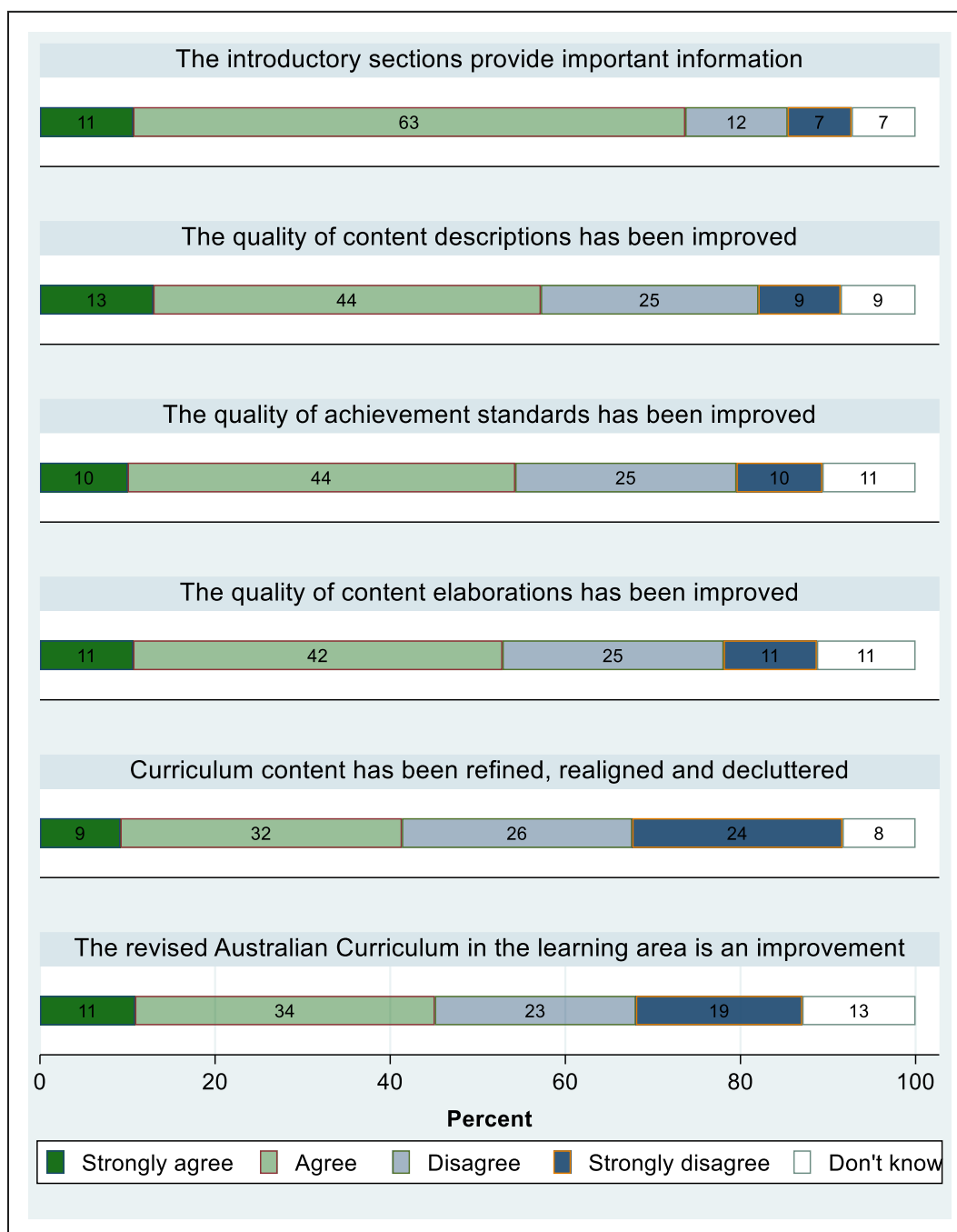
Percentages in the bars are rounded and may not add up to the % agreed and strongly agreed quoted in the text.

The Overall feedback section also asked respondents whether the introductory sections provide important information. Results for all these questions are shown in Figure 7. They show that the statements directly related to the TOR received notably lower agreement (between 41% and 57% agreed or strongly agreed) than the statement about the introductory section (74%).

The statement 'Curriculum content has been refined, realigned and decluttered' received the least favourable responses with 41% of respondents agreeing or strongly agreeing and 50% disagreeing or strongly disagreeing.

5.1.4   Aspects that have improved and aspects that need further improvement

Respondents were also invited to add their general comments on aspects of the revised Science curriculum that had improved and on aspects that needed further refinement. Responses were captured in 2 text boxes

that were respectively labelled. About 58% of the survey respondents commented in one or both of those boxes (Table 6).

Table 6: Open-ended comment, Science survey respondents

Commenting status	n	Percent
Not commented	201	42%
Commented in 'have improved box'	57	12%
Commented in 'further improve' box	94	20%
Commented in both boxes	127	27%
Total	**479**	**100%**

Open-ended responses were coded according to the developed code frame. When coding these open-ended responses, it emerged that comments did often not adhere to the positive (aspects that have improved) and negative (aspects that need further improvement) frames of the 2 text boxes. Instead, the emerging themes were often the same in both boxes. Because of this, comments captured in both boxes are reported combined below.

Table 7 presents the top 5 themes and their subthemes that emerged from the open-ended responses[5]. The top 5 themes related to: *introductory elements: content has improved/should remain; clarity; implementation (out of scope); inclusive content* and *manageability*.

Most of the comments were related to the theme *introductory elements* which 88 of the 278 commenting respondents talked to. There were some positive comments about the revisions of the introductory elements, such as the key connections as well as the core concepts.

> *"The 'Key connections' between Science and other learning areas will support primary teachers to implement an integrated approach to learning science. It will support student appreciation of the influence and impact of science across multiple disciplines. The core concepts provide opportunities for primary teachers to prioritise key ideas and identify interconnections throughout the sequence of learning." (Other – Group, National).*

In addition, there was some support for strands and sub-strands as effective content organisers.

> *"Biology substrand is more streamlined and structured. Earth and space science more flexible in delivering these ideas for students. Much clearer, this structure would have prevented a number of disagreements in the staffroom about what the curriculum is asking." (Secondary teacher, Queensland, Government, Metropolitan).*

> *"Having 3 'science understanding' strands allows time for deeper learning and more time for STEM and integrated investigations." (School leader – Primary, Queensland, Independent, Metropolitan).*

There was also some support for the renaming of the Science Inquiry strand; and realignment of content across sub-strands .

However, as can be seen from the table, the majority of comments related to a perceived need to improve these elements, particularly the strands, sub-strands and core concepts, such as providing additional or clarifying inquiry questions.

> *"Inquiry skills: Sub-strand Evaluating- Students are required to identify possible sources of error but not required to describe ways to improve the quality of data. This aspect of evaluation should be included. Inquiry skills: Sub-strand- Questioning &predicting – is not based on 'scientific knowledge' in Years 7-8. Is the purpose of this that student should be focused more in inquiry based rather than scientific theory?" (School, Queensland, Government, Regional).*

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[5] The table includes 6 themes as 2 themes were ranked 5th.

"Strand: Science Inquiry. The Science Inquiry content description and elaborations need attention when discussing errors and sources of error. There is a misunderstanding that "error" in inquiry can refer to mistake. The term uncertainty should be introduced to describe the range of measurements obtained when investigating the value of a measured quantity." (Secondary teacher, Victoria, Government, Metropolitan).

Further, it was noted by a respondent that observing was a necessary skill that was missing, which was seen an omission for the development and application of inquiry skills.

"OBSERVING is a necessary skill missing from the skills. This is a great omission. You cannot 'question or predict' without first observing. To assist with this inclusion I suggest the following. Amendments… The Table 2 on p.10 of the "All elements" Science F-10 consultation draft includes "making observations" in the first core concept of science inquiry. I advocate that this flows through so that the "Questioning and Predicting" sub-strand becomes "Observing, Questioning and Predicting". I suggest that the following additions are also made: On page 7, Science inquiry involves (making observations), identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments. The content in the science inquiry strand is described in 2-year bands. There are 5 sub-strands. These are: • (Observing), questioning and predicting – Students (make observations) and identify and construct (relevant questions about what they observe), propose hypotheses and predict possible outcomes. If observing is left out of the skills in Science then we are omitting the very thing that sparks any inquiry." (Other – Individual, New South Wales).

There was also some suggestion to revise the introductory elements to build further connections with other STEM learning areas.

"The 'Key connection' between Science and the Design and Technologies is supportive of an integrated STEM approach often implemented in primary education, likewise it would be supportive for an integrated STEM approach if an additional 'Key connection' between Science and Digital Technologies was provided." (Other – Group, National).

Comments of the view that *content has improved* represented the second most common theme. This theme captured a range of comments, including the inclusion and revisions of the Human Endeavour strand, specific content in various year levels, as well as the new content descriptions and elaborations for Science Inquiry and Science as a Human Endeavour.

"Overall the content of the science curriculum seems mostly appropriate. The science as a human endeavour strand has been improved and it is good to see the removal of the focus on history and science jobs. The focus on ethics and other considerations of science and society is welcomed." (Professional association, National).

"Providing specific organelles within the year 8 science elaboration. Moving the tectonic plates to Year 8 is good." (Secondary teacher, Queensland, Independent, Metropolitan).

"The 'space' left in F-3 is an improvement. I believe it will allow for the content present in each year to be more fully explored." (Academic, New South Wales).

"I really like and appreciate the new content descriptors and elaborations for Science Inquiry and Science as a Human Endeavour. I always felt these 2 areas were not paid enough attention in Year 7-10 and the explicit elaborations make it easier to address them." (Secondary teacher, Western Australia, Government, Metropolitan).

"The introduction of only 3 specific topics in the early years is very helpful as they can be taught in more depth. Also allows time for the scientific method, safety and scientific language to be heavily focused on." (School leader – Primary, Queensland, Government, Remote).

There was also acknowledgement of the increased connections with Aboriginal and Torres Strait Islander Histories and Cultures, and for the inclusion of more female scientists and the Matilda effect.

> *"…Secondly, I wanted to say a huge thank you for including more female scientists (explicitly naming them) and mentioning the Matilda effect. I always strived to be more representative of scientists but having this support at the curriculum level will make a big difference. I also appreciate the increase in First Nations content and helping draw out how to address it in the elaborations. I'm not a First Nations person myself and wanted to teach it 'in the right way' while being respectful. So having a lot of elaborations to draw on makes my job in this area a lot easier." (Secondary teacher, Western Australia, Government, Metropolitan).*

> *"Having first nation as first in elaborations is important. Inclusion under human endeavour in grade 8 of the Matilda effect…" (School, Queensland, Independent, Regional).*

The 3rd theme related to comments around *clarity* of the curriculum. These comments encapsulated views on the clarity of the overall wording and the organisation of material, as well as specific elements such as content descriptions and achievement standards. A number of improvements were noted, including improved clarity and specificity of the content descriptions.

> *"The revised curriculum provides additional detail in the elaborations, and these are often of a high standard, useful for classroom teaching. The revised curriculum consolidates some outcomes, which will significantly reduce the risk of duplication and/or skipping content." (Academic, New South Wales).*

> *"The overall format is easy to read, concise and to the point. The layout of the content and content elaborations is also easy to follow." (School leader – Secondary, New South Wales, Independent, Regional).*

> *"Detail provides less ambiguity. Elaborations are excellent. The content descriptions are more specific and give more insight to teachers about the specific content to be taught. The language used has decreased the level of ambiguity for some of the content descriptors." (Education authority, South Australia).*

> *"Content descriptions are clearer than previously. For a beginning teacher or a non-subject specialist they would be more helpful. Thus clarity is improved. Content Descriptions have more depth and are clearer and more challenging. The rewording of the content descriptors includes more specific detail for that content area allowing for more clarity. The rewording looks like it has better links of the content descriptors to applications in the real world. In general, the changes give clarity, adding specificity to the areas of content to be covered and removes some areas of subjectivity. The removal of some content descriptions in P-4 will allow teachers more time to provide deeper learning opportunities for students. Statements link better with skills required in senior subjects, thus better developmentally. More information provided in content descriptors – easier to understand the expectation of what needs to be achieved." (Education authority, Queensland).*

In addition, some noted the use of cognitive verbs in some content descriptions improving clarity and offering clearer expectations.

> *"Clarity of content descriptions under the strand Science as Human Endeavour - The common verb of 'explore' in Prep – 2 and 'investigate' in Years 3-10 provide consistency in expectations." (School leader – Primary, Queensland, Independent, Metropolitan).*

Others specifically mentioned the introduction of inquiry questions in the year level descriptions as an improvement, while others mentioned the improvement quality of the achievement standards and alignment between content descriptions and achievements standards.

A smaller number of respondents commented that further refinements were needed to content descriptions across all strands to improve clarity.

"In some places the content descriptions are limiting and then contradicted by the content elaborations. For example, Year 4 Earth and Space Science limits investigation to physical weathering only but then the elaborations call for examination of biological weathering. There are also a number of places in the Earth and Space Science content elaborations where misleading statements or those that are likely to further misconceptions have been made. We will outline these specifically in section 3 of this survey." (Other – Group, National).

"The elaborations do not always address the content descriptors, indicating that perhaps the content descriptors as written are not appropriate, or are not sufficiently defined." (Secondary teacher, Victoria, Government, Metropolitan).

"Most elaborations are helpful, some are too broad and difficult to justify looking at from a content perspective. The use of the same cognitive verb throughout the content descriptors (investigate) does not indicate the depth of knowledge required and limits opportunities to consistently, explicitly teach key cognitive verbs throughout a unit. When the elaborations begin with a different cognitive verb, it sometimes doesn't match the depth of the content descriptor's cognitive verb. eg. investigating is very different to observing and identifying." (School, Queensland, Government, Metropolitan).

The 4th leading theme in this section related to implementation. As discussed above, issues around implementation, including resourcing, teacher expertise and capability, the method and practice of teaching and assessment, were technically out of scope of the terms of reference of the consultation. However, they were coded according to the code frame, and in relation to Science a common implementation issue was around the perceived need for further guidance.

"I have some concerns about how we identify key intercultural considerations when planning fieldwork - will we be shown models or examples of what this entails? What fieldwork actually happens in year 5 and 6????? There are still questions about how do you assess and grade A-E with only a C achievement standard." (School leader – Primary, Queensland, Government, Metropolitan).

The 5th most common response related to *inclusive content.* Some of these comments related to the age appropriateness of content, and built upon earlier commentary around sequencing of content.

"The general sequencing is aspects of Year 6 - 10 science should be reconsidered with consideration of the concepts covered for each of the age groups. I do not believe that the content is challenging enough for the majority of students in years 6-10." (School leader – Secondary, Australian Capital Territory, Independent, Metropolitan).

A large number of comments within this theme related to the extent to which the curriculum content was perceived as adequately accommodating and enabling teaching for diverse learners' interests and capabilities. Many respondents whose comments fell within this theme challenged the theory of evolution and perceived its teachings did not cater to the beliefs of some students.

"Education must be open. Unlike processes that can be observed and measured (operational science), the idea that everything evolved by natural processes over millions of years is a philosophical belief. It has not been observed and cannot be falsified." (Parent, South Australia, Government, Regional).

However, other respondents commented on this idea, and challenged the perception that Science should be based on 'beliefs', and should instead be foregrounded in facts and observable data.

"The influence of 'wokeness' is becoming all too obvious. Compulsory education for children should be bereft of ideas and philosophies best left to the family. Science is NOT a subject that should participate in this kind of subversive thinking. Indeed science should remain in the domain of proven fact and deductible logic based on observable data." (Secondary teacher, New South Wales, Government, Regional).

Table 7: Aspects that have improved/need further improvement (top 5 themes), Science survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Introductory elements	**88**	**18.4%**
The rationale/aims have improved	6	1.3%
The rationale/aims need further improvement	8	1.7%
The strand/sub-strands/core concepts have improved	21	4.4%
The strand/sub-strands/core concepts need further improvement	52	10.9%
The key connections have improved	8	1.7%
The key connections need further improvement	23	4.8%
Content has improved/should remain	**78**	**16.3%**
General views that content has improved	32	6.7%
Content has better alignment with rationale/aim of learning area	15	3.1%
Content has better alignment with who we want our children to become	6	1.3%
The level of emphasis on Indigenous cultures and perspectives is appropriate	23	4.8%
Various other LA specific content that has improved or should remain	26	5.4%
Clarity	**75**	**15.7%**
The overall language of the curriculum is clearer and/or easier to understand	20	4.2%
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	26	5.4%
The wording of the content descriptions is clearer and/or easier to understand	34	7.1%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	9	1.9%
The wording of the achievement standards is clearer and/or easier to understand	5	1.0%
The wording of the achievement standards need further clarity	9	1.9%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	1	0.2%
Implementation (out of scope)	**69**	**14.4%%**
Pedagogy - this overarching theme encompasses feedback about how children should be taught	37	7.7%
Assessment - this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents.	12	2.5%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	26	5.4%
Inclusive content	**68**	**14.2%**
The curriculum content is inclusive of diverse learners' interests and capabilities.	4	0.8%
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.	56	11.7%
There are concerns around the age-appropriateness of content	9	1.9%
Manageability (amount of content)	**68**	**14.2%**
Decluttering of content evidence, the amount of content is more manageable	19	4.0%
Still too much content/further decluttering needed	54	11.3%

Comments were provided by 278 respondents. Percentages are based on all 479 Science survey respondents. All theme and subtheme categories that emerged from the 2 comment boxes are shown in Table E2 in Appendix E.

Also ranked 5th in terms of the largest number of comments received was the theme of *manageability*. Again, the majority of these comments expressed the view that more content needed to be removed or curriculum decluttered to make it manageable. It should again be noted that some of these comments still recognised that proposed revisions offered improvements, but reinstated the view that further refinement was needed.

> *"The changes are overall positive but not substantial. This revision is more a 'tinkering' rather than the suggested 'overhaul'. The problem with this is that, with primary teachers being incredibly busy working across several curricula, these changes might be interpreted as just 'deleting' and reshuffling units, rather than re-designing units to incorporate different material (e.g., since content has been moved across years and integrated)." (Academic, New South Wales).*

5.1.5   Year level specific comment

Respondents were also prompted to make comment about specific year levels. Of the 479 respondents, 132 provided such detailed feedback, some of whom in relation to multiple year levels. Table 8 lists the number of respondents who provided feedback for each year level.

Table 8: Year-level specific open-ended feedback, Science survey respondents

Year level	Number of respondents
Foundation	16
Year 1	16
Year 2	16
Year 3	18
Year 4	17
Year 5	16
Year 6	28
Year 7	38
Year 8	30
Year 9	37
Year 10	51

5.2 Differences by level of the curriculum

This section explores whether there were differences in survey responses in different year levels of the curriculum. This was achieved by comparing the percentages of agreement (combining strongly agree with agree) across the 3 levels (F-6, Y7-10, F-10). The results are grouped in 3 graphs according to Introductory elements, Curriculum elements and Overall feedback.

Figure 8: Introductory elements by level of curriculum, Science survey respondents
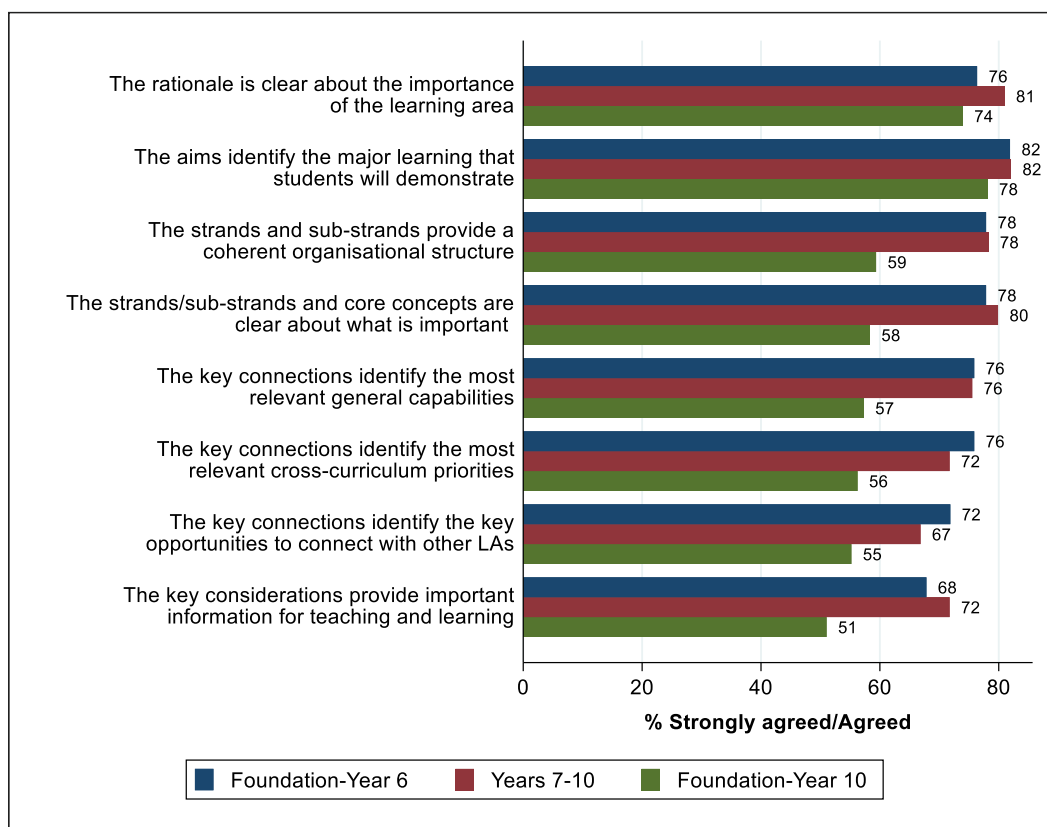

Figure 8 shows the level of agreement for the statements in the Introductory element section between respondents whose responses were framed by different year levels of the curriculum. Levels of agreement expressed by primary and secondary school level respondents were similar while respondents who gave feedback on the F-10 curriculum were notably less likely to agree or strongly agree with the proposed aspects of the achievement standards, key connections and key considerations.

This response pattern was similar for the statements in the Curriculum section of the survey although there were also some more notable differences between F-6 and Y7-10 responses. The latter expressed more favourable responses than other respondent groups when prompted if the achievement standards adequately reflect developmental progression, if the content can be covered in each year, if the content elaborations provide useful illustrations and suggestions and if they support teachers to meaningfully integrate the general capabilities and cross-curriculum priorities (Figure 9).

F-10 respondents were least likely to give a strongly agree or agree rating for all statements in the Curriculum elements section of the survey with one exception: F-6 respondents were least likely to see that the content could be covered each year.

When it came to the Overall feedback statements Y7-10 respondents were more positive than the other respondent groups with the exception of the statement that the curriculum content had been refined, realigned and decluttered (Figure 10). F-10 respondents were notably less likely than the other 2 groups to agree to the 5 TOR statements.

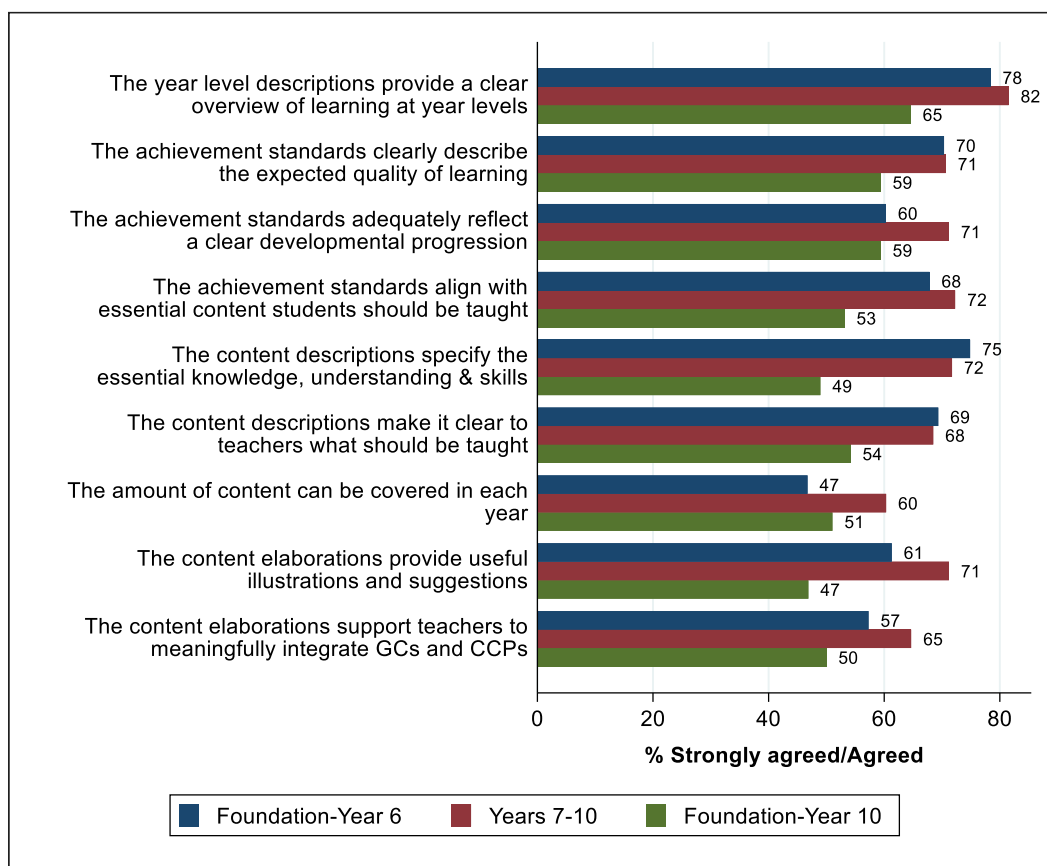*Figure 9: Curriculum elements by level of curriculum, Science survey respondents*

Figure 10: Overall feedback by level of curriculum, Science survey respondents
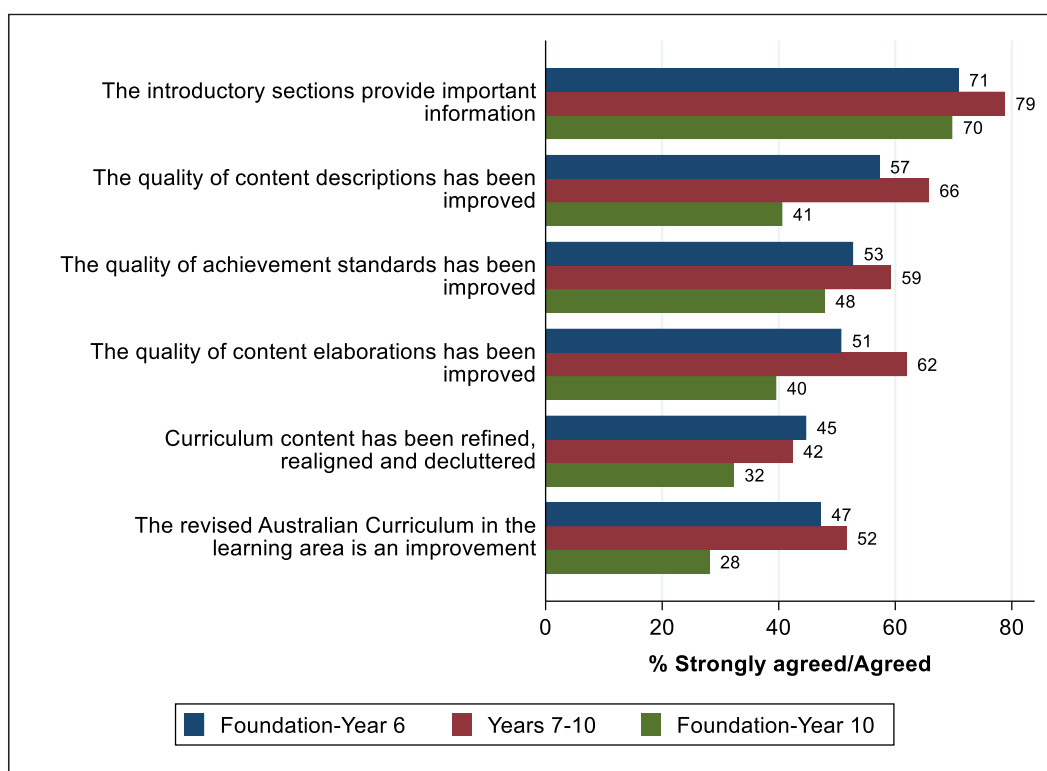
5.3 Other differences between stakeholder groups

5.3.1   States

There were 6 states and territories with 30 or more respondents: Australian Capital Territory (n=38), New South Wales (n=38), Queensland (n=224), South Australia (n=44), Victoria (n=39) and Western Australia (n=72). These are compared in this section.

There were some differences in the perceptions of groups of respondents from these states and territories. Respondents from the Australian Capital Territory were most likely to agree with each of the 8 statements about the Introductory section (Figure 11). In contrast, NSW respondents expressed the lowest level of agreement for the statements on strands and key connections (between 50% and 58%).

Figure 11: Introductory elements by state, Science survey respondents
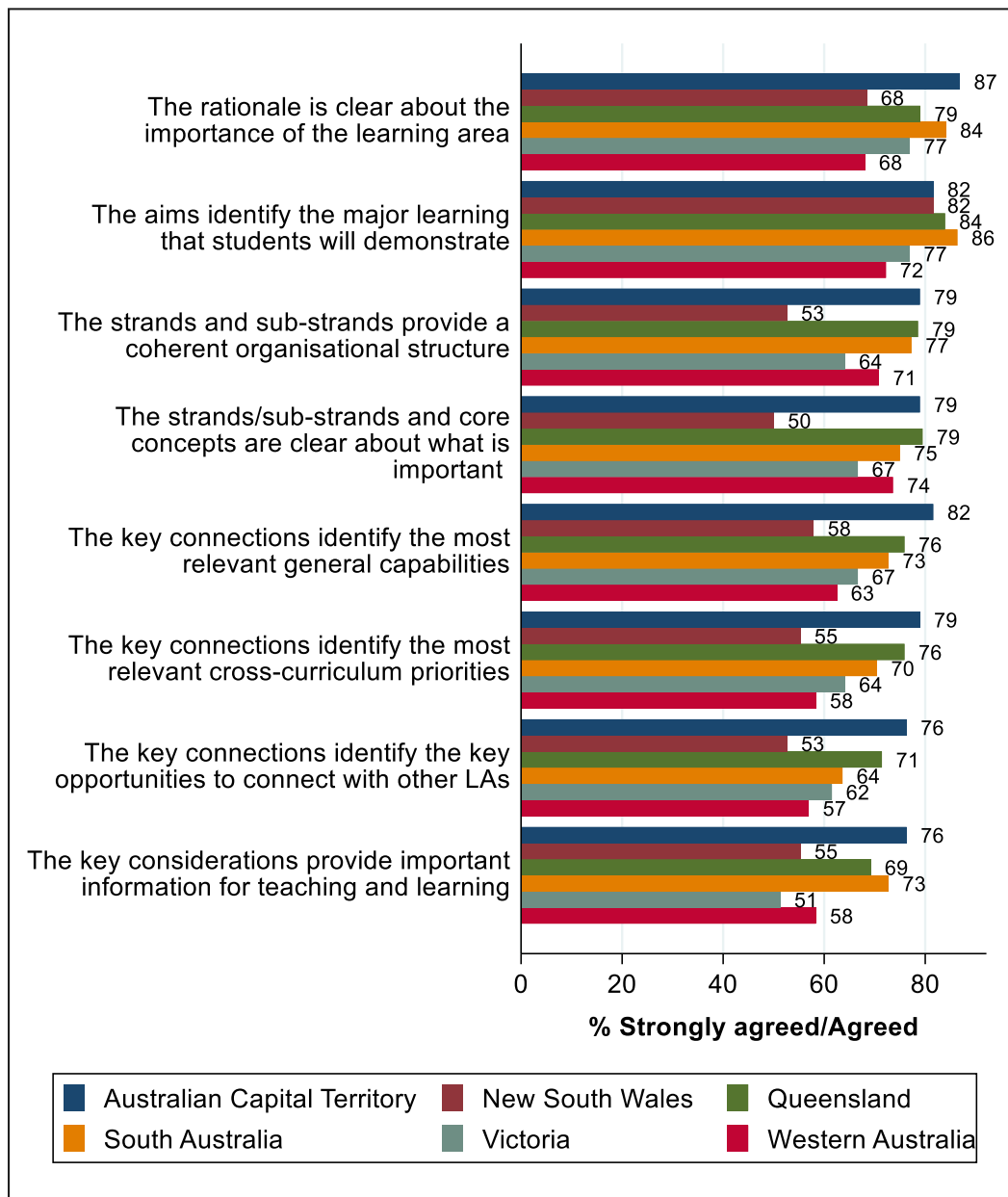
The response pattern for perceptions on the curriculum elements (Figure 12) and those captured in the general feedback section of the survey (Figure 13) are somewhat similar. The confirmation of the 5 TOR statements tended to be particularly low among New South Wales respondents.

It should be noted that the states that have been highlighted, the Australian Capital Territory and New South Wales, are ones that are only represented by a small number of survey respondents (n=38 each). Not too much should be read into these results.

Figure 12: Curriculum elements by state, Science survey respondents
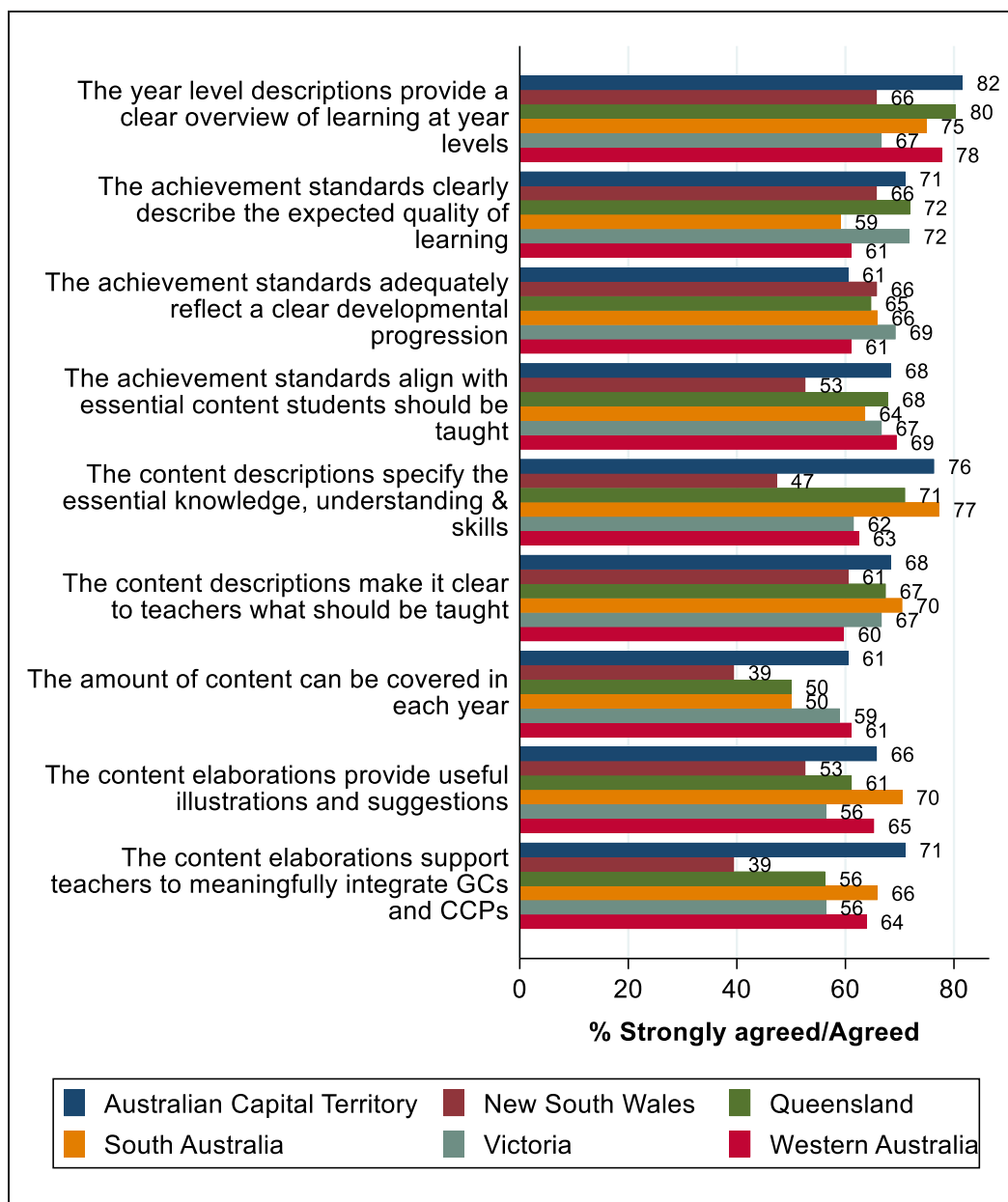
Figure 13: Overall feedback by state, Science survey respondents
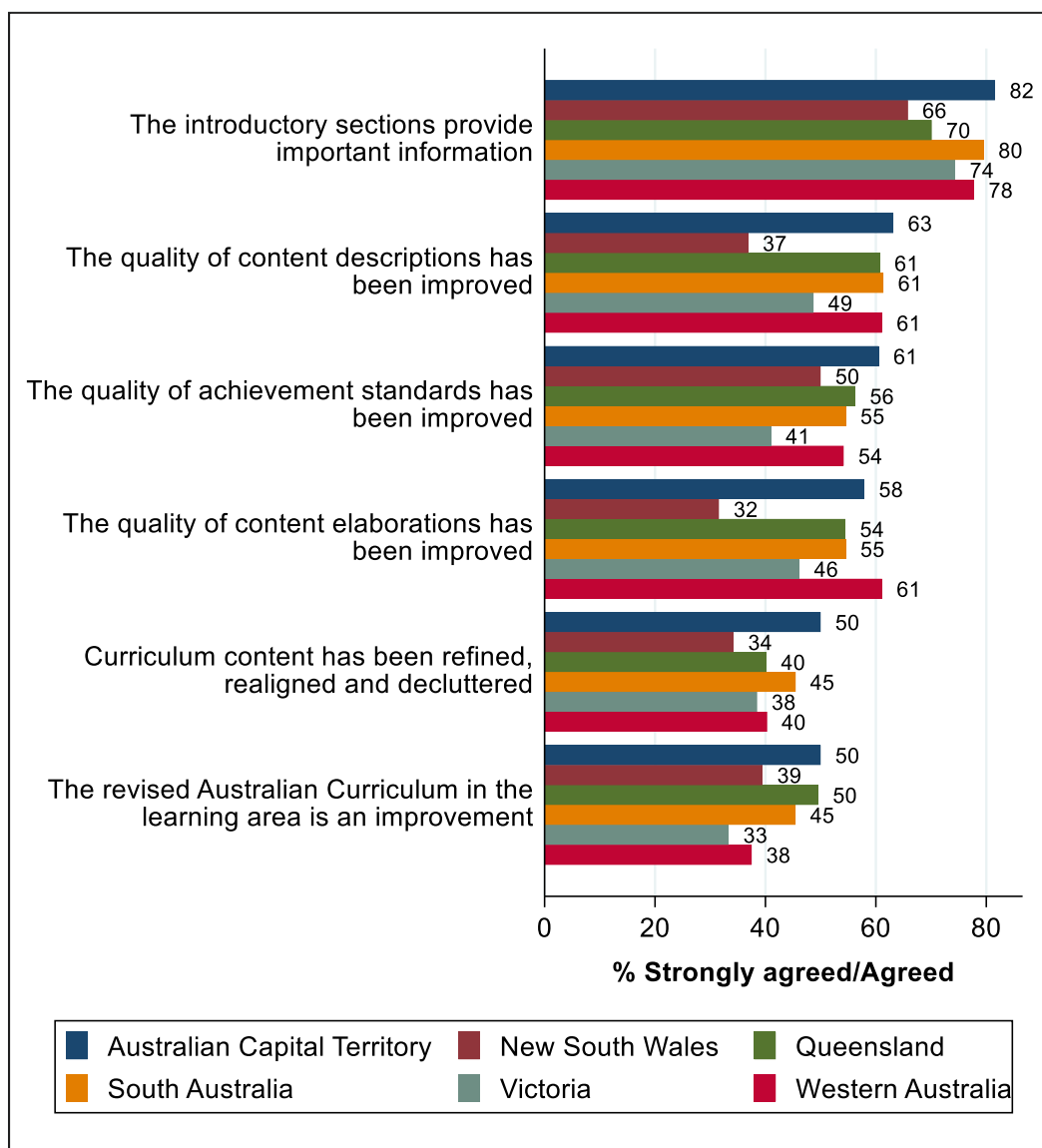
5.3.2   Type of stakeholder

Teachers (n=263), School leaders (n=43), 'Other' individuals (n=32) and schools (n=76) were represented by more than 29 respondents. There were differences between these groups' perceptions, which is illustrated in Figure 14 that shows the level of agreement to the statements in the Curriculum elements section of the survey.

Responding school leaders and schools were more likely to express agreement than the other 2 groups. Compared to those 2 groups, responding teachers were somewhat or noticeably less likely to agree with the statements while 'Other' individuals were, usually by some margin, least likely to approve of a statement in the curriculum section of the survey.

The pattern depicted in Figure 14 very similarly applies to responses to statements in the Introductory and Overall feedback sections of the survey.

Figure 14: Curriculum elements by stakeholder type, Science survey respondents
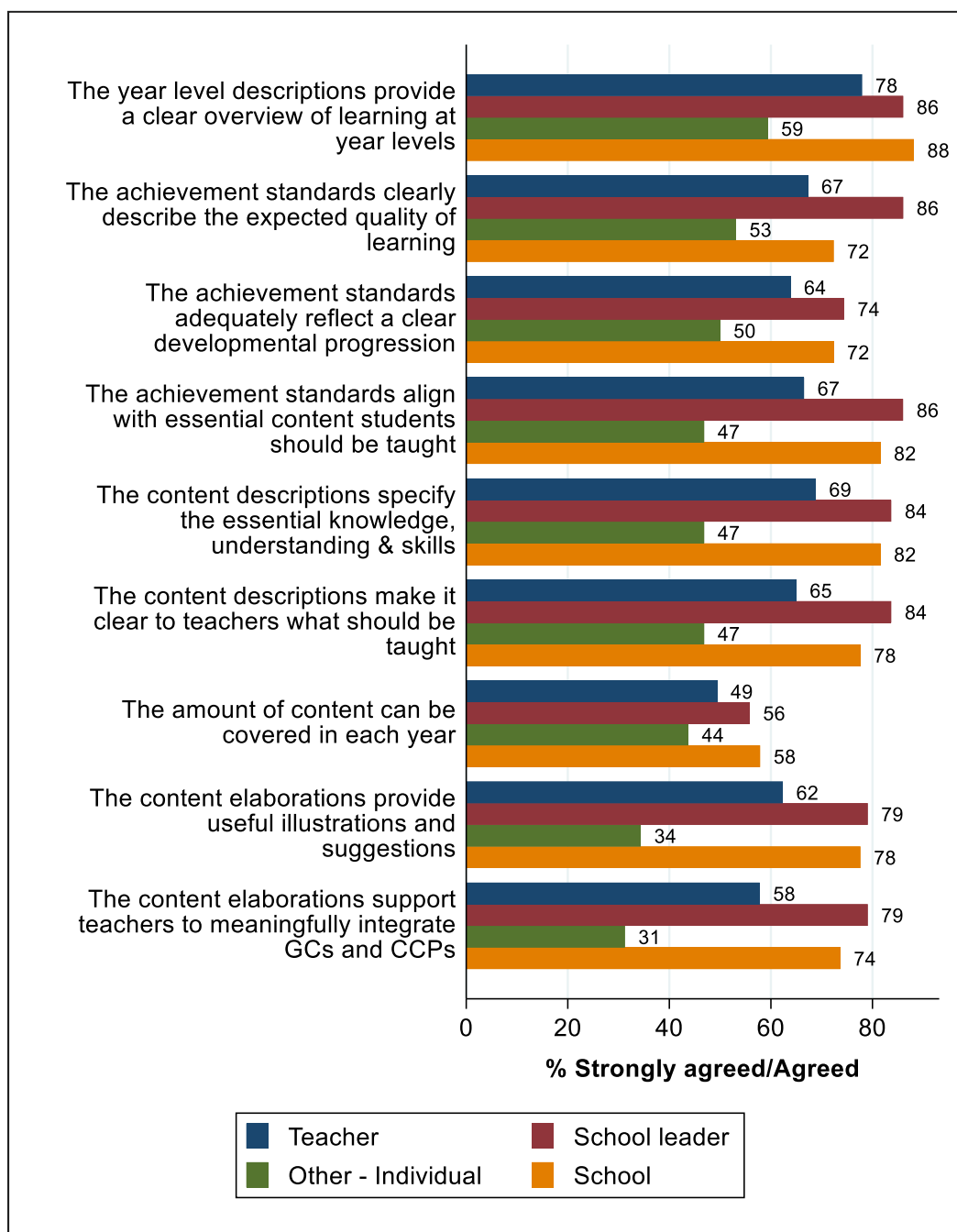
5.3.3   School sector

Teachers, school leaders, students and schools were asked to indicate which school sector they work or study in, and parents were asked to indicate in which sector their child(ren) learn.

Independent and Catholic school respondents were more likely to agree with the statements in the Curriculum section of the survey than respondents linked to Government schools (Figure 15). Of the 3 respondent groups, respondents linked to Catholic schools were most likely to confirm the statements in the Overall feedback section including the 5 statements related to the terms of reference (not shown).

*Figure 15: Overall feedback by school sector, Science survey respondents^*
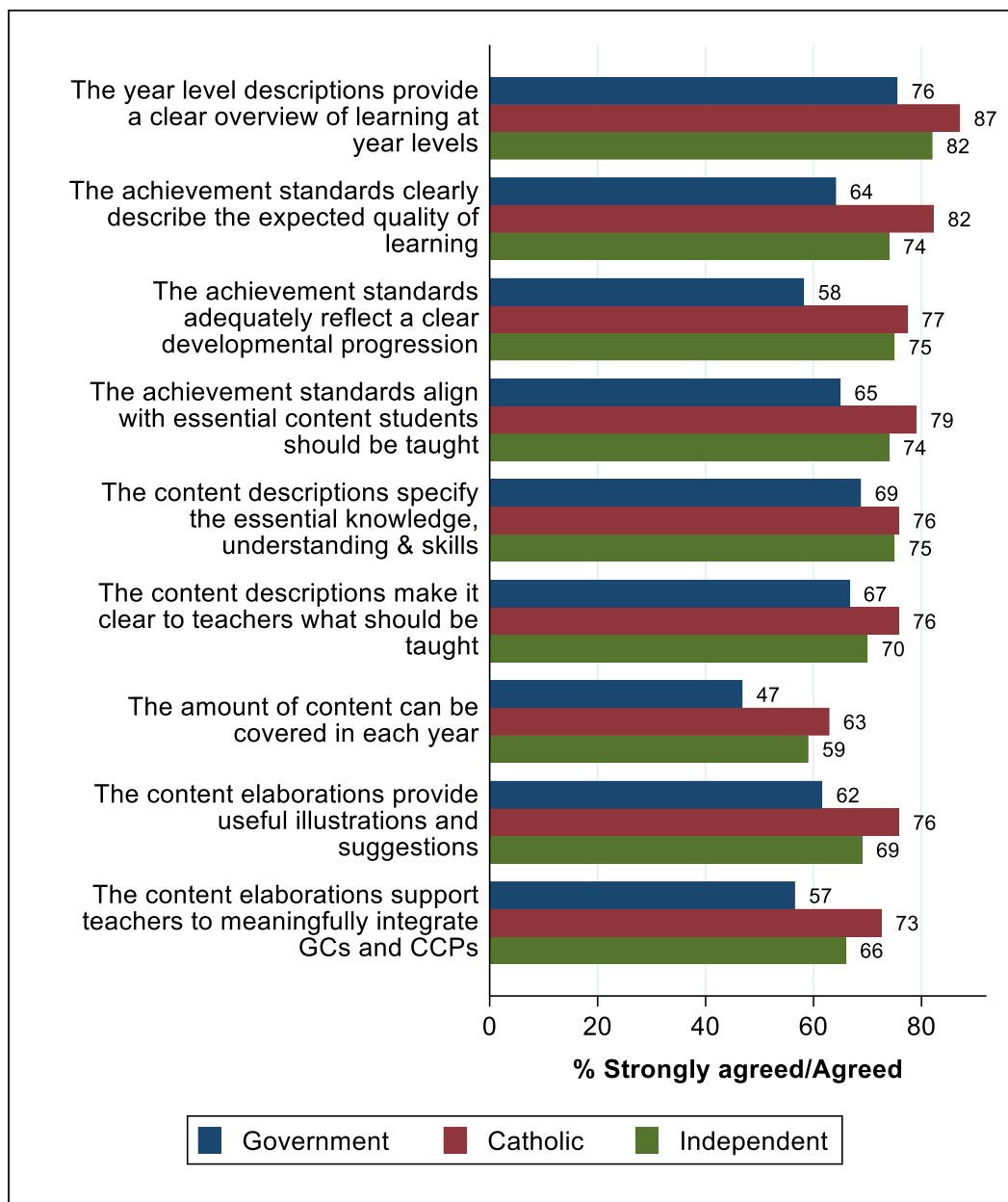
^ Respondents who identified as teachers, school leaders, parents, students and schools.

5.3.4   School location

Respondents who identified as teachers, school leaders, parents, students and schools were also asked their school's location.

Respondents linked to metropolitan schools were consistently more likely to agree with the statements in the survey than respondents linked to regional schools. This is illustrated in Figure 16, which shows the agreement levels for the statements in the Overall feedback section.

The difference between the 2 groups was largest when they were asked if the amount of content can be covered in each year – 59% of respondents linked to metropolitan schools agreed or strongly agreed while only 42% of respondents linked to regional schools did so.

*Figure 16: Differences by school location, Science survey respondents^*

^ Respondents who identified as teachers, school leaders, parents, students and schools
Respondents linked to schools in remote areas are excluded due to their low number (n=7).

5.4 Summary - Survey results

Respondents from Queensland (47%), who identified as teachers (55%) and who were linked to Government schools (49%[6]) and schools in metropolitan areas (54[7]%) were the largest 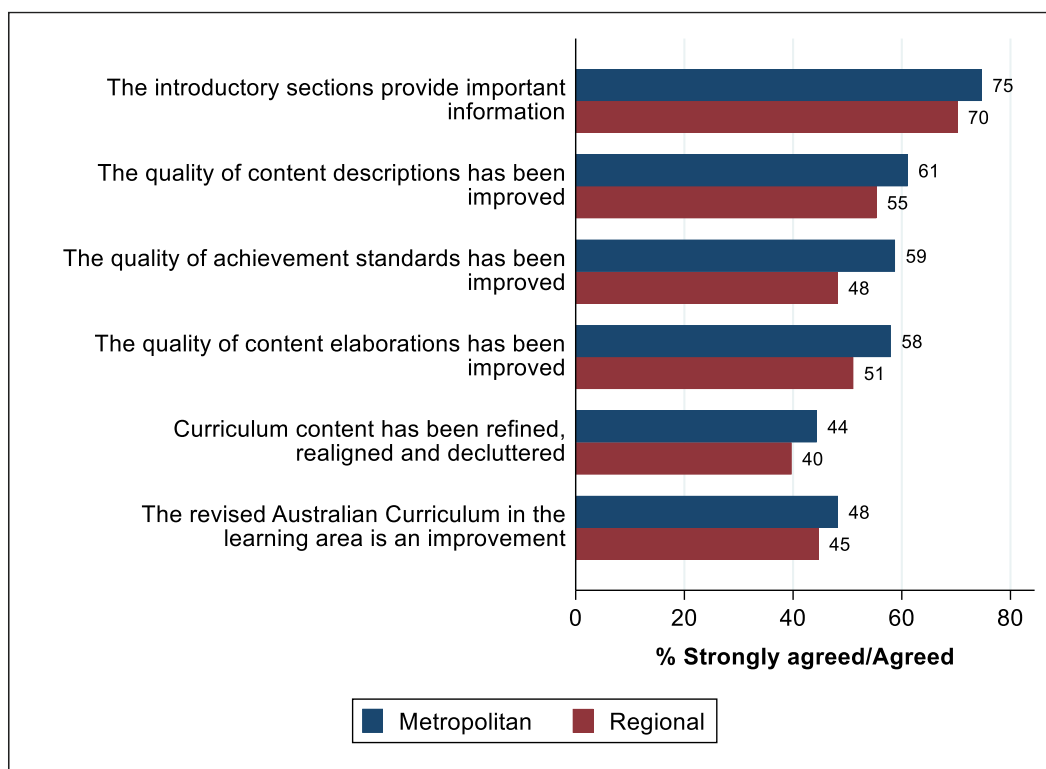respondent groups that influence the overall survey results for the Science curriculum. Overall responses were fairly evenly spread between F-6 (42%) and Y7-10 (38%) with the remaining 20% referring to the F-10 curriculum.

There was a general pattern in the agreement responses discernible across the 3 general questionnaire sections. The level of agreement tended to be highest in relation to statements about the Introductory elements of the curriculum (Figure 4), lower for statements about in the Curriculum elements (Figure 5) and still lower for the 5 TOR statements in the Overall feedback section (Figure 7).

This is also reflected in the distribution of the average agreement scores of respondents when responding to statements in the different sections. These are plotted in Figure 17, where agreement is higher to the left end of the scale and lower toward the right end of the scale. This shows that average scores for the Curriculum elements were further distributed to the right on the 4-point agreement scale than those for the Introductory elements, and that average scores for the Overall feedback statements were further to the right (the disagreement end) than the average scores for the Curriculum elements.

Of all 23 statements that sought agreement ratings in the survey, the ones about the aims, rationale and year level descriptions received the most positive agreement scores (77% to 81% agreement). This is shown in Figure 18, which ranks all statements in descending order of their agreement level. At the other end of the graph, the final 2 TOR statements about decluttering and improvement of the curriculum received agreement ratings by the smallest proportion of respondents (41% and 45%).

Of the introductory and curriculum elements, matters of the curriculum that attracted lesser agreement concerned:

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[6] Percentage based on all respondents while the numerator only applied to teachers, school leaders, students, parents and schools.
[7] As above.

- the clarity of content descriptions in what should be taught;

- the achievement standards adequately reflecting a clear developmental progression;

- the usefulness of the content elaborations; and

- the amount of content that can be covered each year.

All of the relevant propositions are ranked in the bottom half of Figure 18 based on the level of agreement they received and attracted between 29% and 39% disagreement. However, a majority of between 53% and 64% of respondents also agreed or strongly agreed with these propositions.

Figure 17: Introductory elements, curriculum elements and overall feedback, average ratings, Science survey respondents
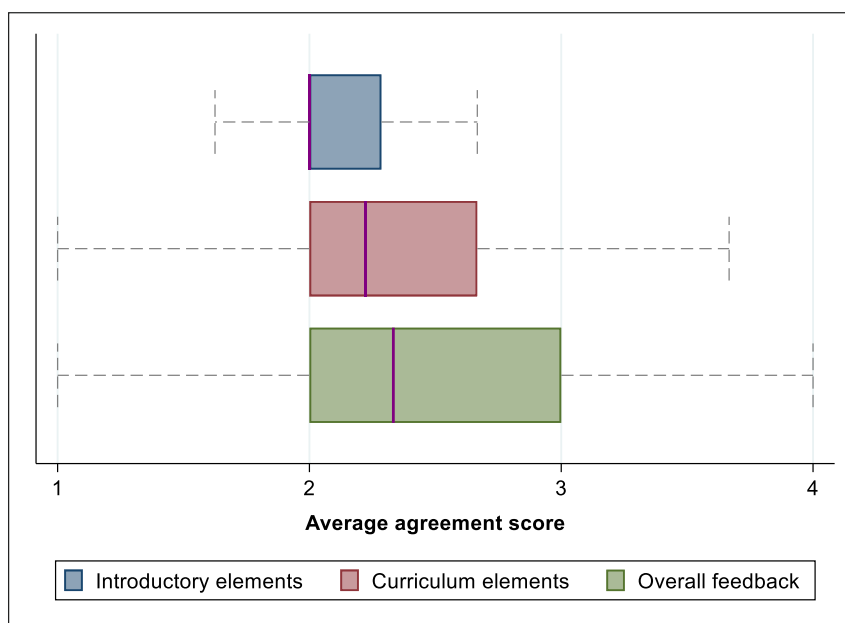
Response options: 1 – Strongly agree, 2 – Agree, 3 – Disagree, 4 – Strongly disagree
Boxplots[8] show the distribution of average ratings across the 8 agreement statements in the Introductory elements section, across the 9 agreement statements in the Curriculum elements section and the 6 agreement statements in the Overall feedback section. Don't know responses were excluded from calculating averages.
The median is indicated by the pink line in each of the boxes.

Respondents who gave feedback on the F-10 curriculum generally were less likely to approve of the survey statements that sought agreement than respondents who only commented on the primary or secondary school level of the curriculum. Secondary (Y7-10) respondents tended to agree at a higher rate with the TOR statements and some of the propositions in the Curriculum elements section of the survey (e.g. related to content elaborations and amount of content).

Responding school leaders and schools tended to be more positive in their responses than teachers and 'other' individual respondents. Respondents with links to Government schools were less likely to agree with the statements in the Curriculum elements section than their peers linked to Catholic and Independent schools. Of the 3 groups, respondents linked to Catholic schools were most likely to confirm that the Review had achieved its objectives (agreed with the 5 TOR statements).

Respondents linked to schools in metropolitan areas were somewhat more likely to confirm all the statements seeking agreement than respondents who were linked to regional schools.

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[8] A box plot (also known as a box-and-whisker plot) displays the distribution of a variable in a way that highlights key summary statistics of the distribution: the median (a line separating the top 50% of values from the lower 50% that would appear in the middle of the box for a normally distributed, and any symmetric, variable); the 25th and 75th percentiles (Q1 and Q3), which mark the 2 ends of the box; and the whiskers, which mark the so-called upper and lower adjacent values (which are the most extreme values within 1.5 times the inter-quartile range (Q3-Q1) from the end of the box).

Figure 18: All survey statements, Science survey respondents

Statement	% Strongly agreed/Agreed
The aims identify the major learning that students will demonstrate	81
The rationale is clear about the importance of the learning area	78
The year level descriptions provide a clear overview of learning at year levels	77
The strands/sub-strands and core concepts are clear about what is important	75
The strands and sub-strands provide a coherent organisational structure	74
The introductory sections provide important information	74
The key connections identify the most relevant general capabilities	72
The key connections identify the most relevant cross-curriculum priorities	70
The content descriptions specify the essential knowledge, understanding & skills	68
The achievement standards clearly describe the expected quality of learning	68
The key connections identify the key opportunities to connect with other LAs	67
The achievement standards align with essential content students should be taught	67
The key considerations provide important information for teaching and learning	66
The content descriptions make it clear to teachers what should be taught	66
The achievement standards adequately reflect a clear developmental progression	64
The content elaborations provide useful illustrations and suggestions	62
The content elaborations support teachers to meaningfully integrate GCs and CCPs	59
The quality of content descriptions has been improved	57
The quality of achievement standards has been improved	54
The quality of content elaborations has been improved	53
The amount of content can be covered in each year	53
The revised Australian Curriculum in the learning area is an improvement	45
Curriculum content has been refined, realigned and decluttered	41

% Strongly agreed/Agreed

The most commonly discussed themes across all open-ended survey feedback were around: *introductory elements: clarity; content has improved/should remain; content that should be removed, sequencing of content, inclusive content, implementation (out of scope),* and *manageability.*

Across the feedback, there were many positive comments around the proposed revisions. In particular, there was a sense that the refinements to the content descriptions offered improved clarity and the structure of the strands offered a better organisation of content. There was also support for the inclusion of inquiry questions

and some cognitive verbs in descriptions. However, even alongside the positive comments, there was feedback for further revision to content, including further refinement to the strands/sub-strands, the sequencing of content so that there was a clear progression of learning, and recommendations to reduce content further to improve the manageability of the amount of content that needed to be covered in a year.

Due to the over-representation of Queensland respondents the overall survey results may be particularly influenced by the Queensland-specific context in which the Australian Curriculum is implemented.

6. Feedback from email submissions

Of the email submissions, there were a total of 114 specifically related to the learning area of Science. Of the 114 email submissions, there were 42 that utilised a template email calling for evolution to be taught as a philosophical belief rather than a science, citing that there was no evidence for the theory of evolution. Some of these submissions called for evolution to be removed from the curriculum entirely; however, most asked for it to be taught as a theory alongside other origin philosophies like creationism.

Of the remaining 72 standard email submissions, there were 39 submissions that had an attachment that was coded alongside the email message provided. The remainder did not have an attachment, but the content within the emails was coded. The findings form this analysis are presented next.

6.1 Findings from email submissions

The code frame (see Appendix C), was utilised to analyse the content of the email submission feedback. As per the open-ended survey feedback, respondents may make the same point multiple times with different examples, but a theme is only coded once for that respondent.

6.1.1 Major themes and subthemes

Table 9 summarises the top 5 major themes together with their subthemes that emerged from the feedback from the 72 standard email submissions, alongside the number and percentage of email respondents discussing this theme. It is possible that a single response has utterances that span across multiple themes. As a result, a comment from a single respondent would be coded to more than one theme. Likewise, a single response could be coded to more than one subtheme.

As can be seen from the table, the majority of respondents felt that further *content should be added* to the science curriculum. The other 4 leading themes were that *content should be removed*, *inclusivity of content*, *implementation* (which was technically out of scope of the terms of reference of the consultation) and *clarity.*

Overall, there were 4 consistent concerns evident within the feedback for the science curriculum content:

1. Religious-based concerns surrounding the teaching of evolution and the big bang within the F-10 curriculum.
2. Concerns surrounding the changes made to the earth sciences curriculum
3. Issues with the introduction of inquiry-based learning
4. Concerns about climate change education

These concerns were captured under the themes of *content should be added* and *content should be removed,* which were the top 2 major themes. There were often concerns surrounding sequencing, specifically in the physics sub-strand and the earth sciences sub-strand. Further detail on the concerns were as follows:

Evolution and The Big Bang

Approximately 12 submissions were related to the incorporation of the theory of evolution into the F-10 curriculum. Some of these submissions called for evolution to be removed from the curriculum entirely; however, most asked for it to be taught as a theory alongside other origin philosophies like creationism. In general, most of these responses were coded, *content should be added – general* as they were asking for creationism to be incorporated into the science curriculum, *content should be removed – general* as they requested that evolution be removed from the science curriculum and taught as a philosophy, and *current curriculum is not inclusive* as they specifically cited a call for diversity in science education.

Table 9: Summary of subthemes, Science standard email submissions

Major Theme and Subtheme	Number of email submissions	Percentage
Content should be added	**50**	**69.4%**
General views that additional or new content should be added	28	38.9%
Additional or new content should be added for better alignment with rationale/aim of learning area	10	13.9%
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)	25	34.7%
Various other LA specific content that should be added	19	26.4%
Content should removed	22	30.6%
General views that there is content that should be removed	24	33.3%
Content should be removed as it is not aligned with rationale/aim of learning area	2	2.8%
There is too much emphasis on Indigenous cultures and perspectives	3	4.2%
Content should be removed that is not aligned with who we want our children to become (e.g., confident, knowledgeable, skilled)	4	5.6%
Various other LA specific content that should be removed	11	15.3%
Inclusive Content	**29**	**40.3%**
The curriculum content is inclusive of diverse learners' interests and capabilities.	1	1.4%
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.	35	15.3%
There are concerns around the age-appropriateness of content	19	26.4%
Implementation (out of scope)	**22**	**30.6%**
Pedagogy	7	9.7%
Implementation support (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	15	20.8%
Clarity	**20**	**27.8%**
The overall language of the curriculum is clearer and/or easier to understand	2	2.8%
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	5	6.9%
The wording of the content descriptions is clearer and/or easier to understand	6	8.3%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	15	20.8%
The wording of the achievement standards is clearer and/or easier to understand	5	6.9%
The wording of the achievement standards need further clarity	3	4.2%
The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand	4	5.6%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	2	2.8%

Earth sciences

Another major topic within the submissions were concerns surrounding the changes to the earth sciences curriculum. These submissions were made by a variety of stakeholders including teachers (and teacher bodies) and mining/geological industry partners. A major concern that was highlighted in most of these submissions was the introduction of the rock cycle into the Year 6 curriculum. This was considered problematic for a multitude of reasons. Firstly, many believe that the rock cycle is not age-appropriate

content for year 6 children and should instead remain in the high school curriculum. There were also concerns about whether primary school teachers have the scientific background knowledge required to teach this concept in the depth it requires for later applications of the knowledge in high school. Furthermore, teaching this concept requires resources (specifically rock kits) that many primary schools do not have access to, thus the implementation of the rock cycle into primary school would cause significant resourcing issues.

There were also generally concerns surrounding the sequencing of this curriculum. One submission stated that:

"The proposed new sequence for the Earth and space science has a major flaw that will adversely impact the whole sequence, and also a few missed opportunities" (unknown).

Several submissions relating to the earth sciences outlined their ideas surrounding how the curriculum can be re-sequenced.

Inquiry-based learning

There were a few submissions regarding the Inquiry-based learning evident within the science curriculum. Some argued that the curriculum employs inquiry-based learning (and that the curriculum outlines this pedagogy rather than actual content). They state that there have been studies that demonstrate that explanation-based learning is more effective than inquiry-based learning as children require background scientific knowledge in order to explore concepts via inquiry:

However, there were also submissions that defended inquiry-based learning, arguing that:

"Further, 'inquiry' in a wider sense needs to be understood as referring to approaches where students explore and generate ideas in response to challenges, not necessarily associated with practical work. It may involve interpreting given data, proposing and discussing solutions using science ideas, or reasoning about the application of ideas. In PISA 2015, statements such as 'the teacher explains scientific ideas' and 'a whole class discussion takes place with the teacher' were taken as indicators of 'direct instruction' and associated with strong student results. Yet such practices are also central to guided inquiry." (Academic, Victoria)

Climate change

There were also submissions regarding the incorporation of climate change into the curriculum. Some were for the change, stating that this education is necessary to help students become informed consumers as they grow up. Others were against teaching students about climate change, often stating that it made children fearful or outright denying climate changes existence.

The 3rd leading theme related to *inclusive content.* The main subtheme related to the inclusivity of content was around the age appropriateness of some content. Whilst there were not major concerns with the age appropriateness of the overall curriculum, there were various suggestions for the F-10 curriculum to shift specific components to other years or shift the focus of content to be more age appropriate.

"The Physical science component would be improved by shifting the focus from factors affecting motion to factors affecting types of movement. Motion is affected by the interaction of an object with its environment, but the content description (AC9SFU02) and most of the elaborations focus solely on the object, increasing the likelihood of embedding common misconceptions about the conditions for motion. It would be preferable for this age group to concentrate on describing types of movement eg rolling, sliding, bouncing. An issue with exploring factors affecting motion is that there are too many dependent factors that will affect the interaction with the environment making meaningful comparisons difficult." (Teacher, Victoria)

"Moving the rocks and the rock cycle content to Year 6 is certain to lead to poor learning outcomes, an unacceptable professional development and management load on Year 6 teachers, and an unacceptable burden upon Primary School resources, storage facilities and OH&S management processes. This is because understanding the 3 rock types is not as simple as knowing their names.

TESEP has been delivering PD on this topic to Secondary School teachers for over 12 years and is well placed to advise ACARA as to what base-level knowledge a teacher requires to appropriately teach the topic to Secondary School Students. TESEP is also well equipped to advise ACARA on the academic level a student needs to be at before they attempt to understand and appreciate this topic. In both cases Primary School is the wrong setting." (Teacher Earth Science Education Programme)

"Particle physics better later as it is very theoretical for this age (AC9S5U04). Man-made electricity and magnetism preferred in Year 7, too much content in Year 6. (AC9S6U01)." (Steiner Education Australia)

Overall, most submissions by schools and education bodies emphasised that they saw the new curriculum as an improvement – especially with the inclusion of First Nation Australians in the science curriculum. However, it should be noted that this praise was often followed with a call for more *implementation* resources for this specific aspect of the curriculum (the 4th leading theme).

However, very few said that the new curriculum had been decluttered and instead it had just been "re-organised and realigned". Most amendments to the content descriptions related to *clarity,* particularly the specific way a content description was worded rather than a general sentiment that the content descriptions were unclear. For example:

"Identifying the places where plants and animals live, including in our homes, local areas such as ponds, bush areas, gardens or zoos (AC9S1U01_E3)

was reworded as:

Identifying local places where plants and animals naturally live, what their basic needs are and how the environment provides these needs." (Group of Academics).

6.2 Summary

In total, there were 72 standard email submissions related to the learning area of Science. The majority of respondents commented upon the content, with suggested additions or removal of specific content. These tended to focus around 4 key themes: religious-based concerns surrounding the teaching of evolution and the big bang within the F-10 curriculum; the earth sciences curriculum; inquiry-based learning and climate change education.

There were an additional 42 emails that utilised a template, which also reflected religious-based concerns surrounding the teaching of evolution and the non-teaching of creation.

7. Jurisdictional feedback

The code frame (see Appendix C) was utilised to analyse the content of the feedback from the 9 jurisdictional submissions. As per the open-ended survey and email feedback, a jurisdictional submission may make the same point multiple times with different examples, but a theme or subtheme is only coded once for that respondent.

7.1 Jurisdictional responses to Overall feedback survey statements

As part of seeking their feedback, the invited jurisdictions were encouraged to respond to the 6 survey statements from the Overall feedback section of the survey. Five of the 9 participating jurisdictions (Tasmania, Queensland, Western Australia, Northern Territory and Independent Schools Australia) provided responses to these questions.

Table 10 presents these results individually for the 5 jurisdictions that responded to the 6 survey statements.

Table 10: Overall feedback by jurisdictional stakeholder

	ISA	NT	TAS	WA	QLD
The introductory sections provide important information	Agree	Strongly agree	Agree	Agree	Agree
The quality of achievement standards has been improved	Agree	Strongly agree		Agree	Agree
The quality of content descriptions has been improved	Agree	Strongly agree	Agree	Agree	Agree
The quality of content elaborations has been improved	Agree	Strongly agree	Agree	Agree	Strongly disagree
Curriculum content has been refined, realigned and decluttered	Agree	Agree	Agree	Disagree	Disagree
The revised Australian Curriculum in the LA is an improvement on the current version	Agree	Strongly agree	Agree	Agree	Disagree

Victoria, New South Wales, National Catholic Education Commission and South Australia did not provide ratings to the Overall feedback survey questions. Tasmania did not provide a rating for the achievement standard question. The ACT did not provide a submission.

● Strongly agree	● Agree	● Disagree	● Strongly disagree

It is evident from Table 10 that of the 5 jurisdictions who responded to the survey statements, the revised Science curriculum was generally regarded as improved. Only Western Australia and Queensland indicated disagreement that content has been refined, realigned and decluttered. Only Queensland indicated that overall, the revised curriculum is not an approvement. Queensland's strong disagreement that the content elaborations have improved is a notable dissention from the other responding jurisdictions.

While Victoria, New South Wales, South Australia, and the National Catholic Education Commission (NCEC) did not respond to the overall statements, analysis of the qualitative data provided by South Australia and the NCEC indicate that the Introductory elements were regarded as improved, while also noting aspects that could be further refined. Victoria indicated that there are opportunities for further improvements to the strands, substrands, and core concepts, and to key connections. Victoria and South Australia indicated that achievement standards need further improvement in terms of alignment with content descriptions and clarity. Other jurisdictions also indicate that further alignment between achievement standards and content descriptions is needed (e.g., Queensland, Western Australia). However, the NCEC indicates that achievement standards are improved both in terms of alignment and clarity. All jurisdictions, with the exception of New South Wales, which provided minimal feedback in relation to the Science learning area, indicated that aspects of the revised content have improved. In terms of refinement and decluttering,

feedback was mixed. Victoria and South Australia expressed the view that some content has been reduced. However, South Australia also noted that F–3 needs more content reduction. Qualitative coding indicates that 6 jurisdictions suggested aspects of content that should be added or reinstated to the Science curriculum. Victoria noted that many elaborations are improved. Specific suggestions were offered for further improvement. South Australia indicated concerns around aspects of the content, alongside a range of other suggested improvements. However, South Australia also noted that content descriptions generally provide greater clarity on concepts to be taught. While Victoria and the NCEC indicated the content has been reduced and refined, South Australia indicated that more decluttering is needed.

7.2 Major themes and subthemes

The themes that were most prominent in participating jurisdictions' feedback were *introductory elements* (commented on by 8 jurisdictions), *clarity* (commented on by 6 jurisdictions), *implementation* (commented on by 8 jurisdictions), *content has improved or should remain* (commented on by 8 jurisdictions) and *manageability* (commented on by 8 jurisdictions).

In relation to the *introductory elements*, most jurisdictions felt that the introductory elements had improved but some further improvements are also suggested by some.

> *"The rationale clearly describes the importance of science in society and why students should study science at school ... The relationship between the core concepts and key ideas could be made clearer in the proposed new structure..." (Western Australia)*

> *"The introductory sections promote the importance of Science as a learning area. The inclusion of key connections and key considerations support teachers to develop school-wide and year level plans ... A strength of the rationale is its clarity" (Queensland)*

> *"It was noted that 'observation', which is a critical part of science and a driver for curiosity, had been omitted from the aims and that it should be included here." (NCEC)*

Also within the introductory elements theme was a pattern in responses relating to the strands and substrands, which are generally positively received. Victoria, however, suggested improvements to the sequencing.

> *"The order of SHE, Science Understandings and SI is inconsistent throughout the proposed curriculum, and needs to be reviewed." (Victoria)*

> *"The clear interconnectedness of the 3 strands: Science Understanding (SU), Science Inquiry (SI) and Science as a Human Endeavour (SHE). This will enable science teaching to be holistic; teachers have struggled with the inclusion of SHE in the current version of the science curriculum." (Tasmania)*

> *"There is support for the retention of the current strands and sub-strands as effective content organisers. They reflect the disciplinary knowledge, understanding and skills valued within the learning area. The change of the strand name from Science inquiry skills to Science inquiry is positive." (Queensland)*

> *"The strands/substrands provide a coherent organisational structure." (Western Australia)*

> *"Science as a Human Endeavour (SHE) strand is an important aspect of the Science curriculum, and it is positive that this continues to have been maintained throughout the scope and sequence from F to Year 10." (South Australia)*

In relation to *clarity*, language was generally regarded as improved, with some jurisdictions offering specific feedback for further refinement.

> *"The clarity of the language and appropriate use of scientific terminology throughout the content descriptions is greatly improved." (Queensland)*

> *"The language used in core concepts should also be reviewed to improve clarity." (Victoria)*

"The clarity of language is improved, however, the verb <u>explore</u> has been used in F-2 and <u>investigate</u> in Years 3 -10 for all Science Understanding and Science as a Human Endeavour content descriptions. The verbs explore/investigate should be removed from these 2 strands and the statements should be made propositions." (Western Australia)

"Content Descriptions are clearer than previously. For a beginning teacher or a non-subject specialist they would be more helpful. Thus clarity is improved." (ISA)

While implementation issues were out-of-scope of the Review, it is notable that this was the theme that attracted the 3rd highest number of comments. Much of this was related to the need for professional development to support non-specialist teachers given a sense that the subject is more complex and demanding. Other commentary around implementation support related to the incorporation of Aboriginal and Torres Strait Islander cultures and knowledges.

"No specific advice or provision for teaching science in multi-year classes." (Tasmania)

"A lack of access to the resources required to deliver some content elaborations renders them inaccessible ... some of the proposed content elaborations are more complex, and their specificity renders them impractical with respect to background research time needed for generalist and non-specialist teachers." (Queensland)

"Greater support is required in linking the Cross-Curriculum Priority - Sustainability to the Science areas." (ISA)

"Teachers have requested that more support and resources be developed to support the curriculum, particularly in implementing First Nations content and the use of the core concepts ... More detail could be provided for teachers in how to take the inquiry questions and turn them into questions that can be tested empirically." (NCEC)

Another leading sub-theme was that *various learning area specific content has improved/should remain*. There was a pattern in responses in relation to Aboriginal and Torres Strait Islander cultures and perspectives, with these inclusions generally positively received.

"The explicit inclusion of First Nations perspectives into Content Descriptions not just in elaborations – which are optional as with the case in the current version." (Tasmania)

"First Nations inclusions are overdue and extremely welcome." (ISA)

Another aspect of content that was perceived as improved relates to the inclusion of inquiry questions.

"The inclusion of inquiry questions in the year-level descriptions improves the clarity of the curriculum overall ... but some refinements are needed, so that students can undertake level-appropriate scientific inquiry…" (Victoria)

"The intent of including inquiry questions is commended. However, the introductory sentences, or stems, need to be strengthened to ensure the inquiry questions' role is framed correctly." (Queensland)

"The addition of inquiry questions could support new teachers to spark curiosity and think critically and creatively about the Science concepts and how to interweave the 3 strands."

In terms of *manageability*, while most jurisdictions noted that some aspects of content have been reduced, there was a pattern in feedback indicating more decluttering is needed.

"... The current attempts to declutter the Science curriculum by removing, merging or moving down concepts to lower year levels concepts have not been realised. Instead this rearrangement has weakened student opportunities to develop deep understanding in primary years with the oversimplification of complex concepts and the movement of several concepts from middle years into primary." (South Australia)

"The number of Content Descriptions is about the same, so the curriculum is not less cluttered." (ISA)

"While there is support for the removal of one Science understanding content description in each year from Foundation to Year 3, overall there has been little decluttering of the content." (Queensland)

It is notable that 6 jurisdictions commented about age-appropriateness. Some jurisdictions expressed the view that the cognitive demand/content in the revised curriculum is too high. Suggestions were made for reinstating or resequencing content in some year levels to be more age appropriate and reflect better development progression.

"In general, the cognitive demand is age-appropriate... However, the progression is not always logical within banded content." (Queensland)

"In some cases the elaborations are cognitively beyond the demand of the associated content description." (Victoria)

"The content descriptions specify the essential knowledge, understanding and skills ... however there are some exceptions related to the developmental appropriateness of content." (Western Australia)

An overview of individual jurisdictions' positive feedback as well as perceived aspects for further improvement is provided in Appendix G.

7.3 Summary

In total, there were 9 submissions from jurisdictional stakeholders in relation to the learning area of Science. The key themes were *introductory elements* (commented on by 8 jurisdictions), *clarity* (commented on by 6 jurisdictions), *implementation* (commented on by 8 jurisdictions), *content has improved or should remain* (commented on by 8 jurisdictions) and *manageability* (commented on by 8 jurisdictions). Most noted improvements to the introductory elements, content descriptions and elaborations, achievement standards, and alignment.

Several aspects of the revised Science curriculum were noted as improved, including Aboriginal and Torres Strait Islander perspectives and inquiry questions. The explicit inclusion of First Nations perspectives into the content descriptions and elaborations was positively received by jurisdictions. However, some noted that professional development and practical implementation support (e.g., resources) will be needed. Including inquiry questions was welcomed and valued by all; however, some jurisdictions felt the inquiry questions included are not always age appropriate.

Generally, jurisdictions appeared to agree that more decluttering is needed to achieve manageability, although 6 jurisdictions indicated that there are aspects of content that should be reinstated or added to the revised Science curriculum.

There was a pattern of queries around Science as a human endeavour. Some jurisdictions were satisfied with the revised form, others preferred the previous version, while still others felt more alignment is needed.

Some jurisdictions expressed the view that the cognitive demand/content in the revised curriculum is too high. Suggestions were made for reinstating or resequencing content in some year levels to be more age appropriate and reflect better development progression.

Appendix A – Questionnaire

Consultation survey questions
For the learning areas and subjects

Introduction

The learning area survey gives you the opportunity to provide feedback on the proposed changes to any of the following learning areas and subjects.

- Mathematics
- Science
- Science
- Humanities and Social Sciences (HASS)
  - HASS Foundation – Year 6
  - History Years 7–10
  - Geography Years 7–10
  - Civics and Citizenship Years 7–10
  - Economics and Business Years 7–10
- Health and Physical Education
- Technologies
  - Digital Technologies
  - Design and Technologies
- The Arts
  - The Arts Foundation – Year 6
  - Dance Years 7-10
  - Drama Years 7-10
  - Media Arts Years 7-10
  - Music Years 7-10
  - Visual Arts Years 7-10
- Languages
  - French
  - Japanese
  - Chinese
  - Italian

The survey has 3 sections.

1. Background information:

The survey begins by gathering some demographic information and asking you to nominate the levels, and the specific subjects (where relevant) that you wish to comment on.

2. General questions

This is the main part of the survey. In this section you will be asked to respond to a number of statements about the different elements of the consultation curriculum:

- *Introductory elements* - the rationale, aims, organisation of the learning area, key connections and key considerations

- *Curriculum elements* - the level descriptions, achievement standards, content descriptions and content elaborations.

There is also a section called *Overall feedback*, where you will be asked to respond to some overall statements related to the terms of reference for the Review.

You will also be invited to add any general comments about what has improved and what needs further refinement.

3. Year/band level specific feedback

This section is optional and you can comment on as many levels as you wish. You will be able to add any comments about what has improved and what needs further refinement for the particular levels you select.

Section 1: Background information questions

Please select which levels you are giving feedback on (Note: options will vary depending on what learning area and subject survey you complete).
- o Foundation - Year 6 curriculum
- o Years 7 - 10 curriculum
- o Foundation - Year 10 curriculum

Please indicate if you are answering the survey as an individual or as a group.

☐ Individual

Individual response follow up questions
In which state or territory are you based?
- o Australian Capital Territory
- o New South Wales
- o Northern Territory
- o Queensland
- o South Australia
- o Tasmania
- o Victoria
- o Western Australia
- o National
- o Other

Which CATEGORY best describes you?
- o Primary teacher*
- o Secondary teacher*
- o F-12 teacher*
- o School leader – Primary*
- o School leader – Secondary*
- o School leader – F-12*
- o Academic
- o Parent*
- o Student*
- o Employer / Business
- o Other

If you select this category as an individual or group you will be asked 2 additional questions.

In which sector is your school?
- o Government
- o Catholic
- o Independent

What best describes your school's location?
- o Metropolitan
- o Regional
- o Remote

☐ Group

Group response follow up questions
In which state or territory are you based?
- o Australian Capital Territory
- o New South Wales
- o Northern Territory
- o Queensland
- o South Australia
- o Tasmania
- o Victoria
- o Western Australia
- o National
- o Other

Which CATEGORY best describes you?
- o School*
- o Professional association
- o University faculty
- o Education authority
- o Parent organisation
- o Community organisation
- o Other

Please indicate the NAME of the group or institution below. (Note: Schools will not be asked to supply the school name).

_____

Describe the membership of your group.

_____

Number of members/people represented in this response (approx.). Please use numerical values.

_____

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Section 2: General feedback

Indicate your level of agreement with the following statements.
Introductory elements
Rationale

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The rationale is clear about the importance of the learning area/subject	☐	☐	☐	☐	☐

Aims

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The aims identify the major learning that students will demonstrate	☐	☐	☐	☐	☐

Organisational structure

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The strands/sub-strands provide a coherent organisational structure	☐	☐	☐	☐	☐
The strands/sub-strands and core concepts are clear about what is important in the learning area/subject	☐	☐	☐	☐	☐

Key connections

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The key connections section identifies the most relevant general capabilities	☐	☐	☐	☐	☐
The key connections section identifies the most relevant cross-curriculum priorities	☐	☐	☐	☐	☐
The key connections section identifies the key opportunities to connect with other learning areas.	☐	☐	☐	☐	☐

Key considerations

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The key considerations section provides important information for planning teaching and learning	☐	☐	☐	☐	☐

Curriculum elements

Year/band level descriptions

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The year/band level descriptions provide a clear overview of the learning that students should experience at the year/band level	☐	☐	☐	☐	☐

Achievement standards

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The achievement standards clearly describe the expected quality of learning students should typically demonstrate by the end of the year/band	☐	☐	☐	☐	☐
The achievement standards adequately reflect a clear developmental progression.	☐	☐	☐	☐	☐
The learning described in the achievement standards aligns with the essential content students should be taught.	☐	☐	☐	☐	☐

Content descriptions

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The content descriptions specify the essential knowledge, understanding and skills that should be learned.	☐	☐	☐	☐	☐
The content descriptions make it clear to teachers what should be taught.	☐	☐	☐	☐	☐
The amount of content can be covered in each year/band. *Note: If you answer disagree or strongly disagree to this statement you will be given this follow up question (see below).*	☐	☐	☐	☐	☐
What content should be removed or what revisions are needed to make the content more manageable in the learning area/subject curriculum?					

Content elaborations

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The content elaborations provide useful illustrations and suggestions on how to plan and teach the content.	☐	☐	☐	☐	☐
The content elaborations provide a range of contexts that support teachers to meaningfully integrate the general capabilities and cross-curriculum priorities	☐	☐	☐	☐	☐

Overall feedback

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The introductory sections provide important information.	☐	☐	☐	☐	☐
The quality of content descriptions has been improved.	☐	☐	☐	☐	☐
The quality of achievement standards has been improved.	☐	☐	☐	☐	☐
The quality of content elaborations has been improved.	☐	☐	☐	☐	☐
Curriculum content has been refined, realigned and decluttered.	☐	☐	☐	☐	☐
The revised Australian Curriculum in the learning area/subject is an improvement on the current version.	☐	☐	☐	☐	☐

Optional comments:

If you would like to provide feedback about general aspects of the revised learning area/subject that **have improved,** please use the comments box.

If you would like to provide feedback about general aspects of the revised learning area/subject curriculum that **need further improvement,** please use the comments box.

Section 3: Band/level specific feedback (optional)

Would you like to give feedback on a specific year or band level?
- o Yes
- o No

If you answer No, you will be asked to SUBMIT the survey.
If you answer Yes, you will be asked which year or band levels you would like to provide feedback on.
Then you will be invited to provide specific feedback in comments boxes for the following 2 questions.

Please add your comments about aspects of the revised learning area/subject for band/level curriculum that **have improved.** If you comment on specific content descriptions or elaborations please reference the code number.

Please add your comments about aspects of the revised learning area/subject for band/level curriculum that **need further improvement.** If you comment on specific content descriptions or elaborations please reference the code number.

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Appendix B – Changes to survey statements in reporting

Question labels that were changed in the reporting are listed below.

Wording in questionnaire	Wording in report
The strands/sub-strands and core concepts are clear about what is important in the learning area	The strands/sub-strands and core concepts are clear about what is important
The key connections section identifies the key opportunities to connect with other learning areas	The key connections identify the key opportunities to connect with other LAs
The key considerations section provides important information for planning teaching and learning	The key considerations provide important information for teaching and learning
The year level descriptions provide a clear overview of the learning that students should experience at the year level	The year level descriptions provide a clear overview of learning at year levels
The achievement standards clearly describe the expected quality of learning students should typically demonstrate by the end of the year	The achievement standards clearly describe the expected quality of learning
The learning described in the achievement standards aligns with the essential content students should be taught	The achievement standards align with essential content students should be taught
The content descriptions specify the essential knowledge, understanding and skills that should be learned	The content descriptions specify the essential knowledge, understanding & skills
The content elaborations provide useful illustrations and suggestions on how to plan and teach the content	The content elaborations provide useful illustrations and suggestions
The content elaborations provide a range of contexts that support teachers to meaningfully integrate the general capabilities and cross-curriculum priorities	The content elaborations support teachers to meaningfully integrate GCs and CCPs

Appendix C – Code Frame

A code frame to code the open-ended feedback was co-designed with ACARA. Based on scrutiny of documentation of the proposed curriculum revisions, survey materials and preliminary survey responses, along with ongoing consultation with ACARA, the following themes, and subthemes were established as a code frame.

The themes and subthemes of the code frame which apply to all learning areas are described in this section. The structure of main themes and subthemes is below. A *Various other learning area specific…* category is assigned to 3 of the main themes. This category typically captures a wide variety of opinions and suggestions that respondents expressed in each learning area under the main theme and outside the subthemes of the respective main theme. The category should be interpreted as an 'other' category under the respective main theme. It does not represent a homogenous subtheme that can stand meaningfully by itself.

Theme/Subtheme

Introductory elements: This theme encapsulates views regarding the introductory elements of the curriculum. These subthemes are as follows:

The rationale/aims have improved
The rationale/aims need further improvement
The strand/sub-strands/core concepts have improved
The strand/sub-strands/core concepts need further improvement
The key connections have improved
The key connections need further improvement

Content has improved/should remain: This theme reflects views about the improvements to the curriculum, based on the proposed revisions, along with comments about content that should remain as part of the revisions. These subthemes are as follows:

General views that content has improved
Content has better alignment with rationale/aim of learning area
Content has better alignment with who we want our children to become
The level of emphasis on Indigenous cultures and perspectives is appropriate
Various other LA specific content that has improved or should remain

Content should be added: This theme captures comments which express a desire for further content to be added. The subthemes are as follows:

General views that additional or new content should be added
Additional or new content should be added for better alignment with rationale/aim of learning area
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)
There should be more emphasis on Indigenous cultures and perspectives
Various other LA specific content that should be added

Content should be removed: This theme captures comments which reflect views about content that should be removed from the curriculum. The subthemes are as follows:

General views that there is content that should be removed
Content should be removed it is not aligned with rationale/aim of the learning area
Content should be removed that is not aligned with who we want our children to become (e.g., confident, knowledgeable, skilled)
There is too much emphasis on Indigenous cultures and perspectives

Various other LA specific content that should be removed

Evidenced-based content: This theme captures comments about the extent to which the curriculum is seen as being based on evidence/science. The subthemes are as follows:

The included content appears evidence-based

The included content does not appear to be sufficiently based on evidence and/or needs to be more informed by science/evidence

Inclusive content: This theme captures comments about the extent to which the content is considered appropriate and inclusive for students. The subthemes are as follows:

The curriculum content is inclusive of diverse learners' interests and capabilities

The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.

There are concerns around the age-appropriateness of content

Manageability (amount of content): This theme reflects comments about the extent to which the curriculum is seen as being manageable or cluttered with content. The subthemes are as follows:

Decluttering of content evident, the amount of content is more manageable

Still too much content/further decluttering needed

Sequencing of content: This theme reflects views about the suitability of the developmental progression of content. The subthemes are as follows:

The sequencing of content has improved

The sequencing of content needs further improvement

Achievement standards: This theme reflects views about the suitability of the achievement standards. The subthemes are as follows:

Achievement standards align with content descriptions

Achievement standards need better alignment with content descriptions

Clarity: This overarching theme encompasses the readability and ease of understanding the documentation. The subthemes are as follows:

The overall language of the curriculum is clearer and/or easier to understand

The overall language of the curriculum could use further revision to be clearer and/or easier to understand

The wording of the content descriptions is clearer and/or easier to understand

The wording of the content descriptions could use further revision to be clearer and/or easier to understand

The wording of the achievement standards is clearer and/or easier to understand

The wording of the achievement standards need further clarity

The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand

The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand

Implementation (out of scope): This theme captures comments that raise issues around implementation. Whilst these comments are technically out of scope of the terms of reference of the Review, they were considered predominant enough in the responses to be coded. The subthemes are as follows:

Pedagogy - this overarching theme encompasses feedback about how children should be taught

Assessment - this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents.

Support for implementation

Other: Any comments that could not be captured in the themes above, were coded here.

Sub-themes indicating improvement	Sub-themes indicating further refinements

Appendix D – Groups participating in the survey

Group name provided in on-line survey
Australian Association of Christian Schools
Australian Earth Science Education (AusEarthEd)
Australian Geoscience Council
Australian Psychological Society
Catholic Education Cairns
Catholic Education South Australia
Independent Schools Queensland
Monash University - Faculty of Education
Primary Connections, at Australian Academy of Science
Primary Industries Education Foundation Australia
Rockhampton Catholic Education
Science teachers of a school
Science by Doing at Australian Academy of Science
Science faculty of a school
South Australian Science Teachers Association (SASTA)
Tasmanian Catholic Education Office
Water Services Association of Australia

Appendix E – Themes from open-ended survey feedback

Table E1: Content that should be removed or revisions needed to make content more manageable, Science survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Introductory elements	**45**	**9.4%**
The rationale/aims have improved	1	0.2%
The rationale/aims need further improvement	7	1.5%
The strand/sub-strands/core concepts have improved	1	0.2%
The strand/sub-strands/core concepts need further improvement	31	6.5%
The key connections have improved	0	0.0%
The key connections need further improvement	18	3.8%
Content has improved/should remain	**2**	**0.4%**
General views that content has improved	0	0.0%
Content has better alignment with rationale/aim of learning area	1	0.2%
Content has better alignment with who we want our children to become	0	0.0%
The level of emphasis on Indigenous cultures and perspectives is appropriate	0	0.0%
Various other learning area specific content that has improved or should remain	1	0.2%
Content should be added	**19**	**4.0%**
General views that additional or new content should be added	0	0.0%
Additional or new content should be added for better alignment with rationale/aim of learning area	0	0.0%
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)	3	0.6%
There should be more emphasis on Indigenous cultures and perspectives	1	0.2%
Various other learning area specific content that should be added	17	3.5%
Content should be removed	**83**	**17.3%**
General views that there is content that should be removed	34	7.1%
Content should be removed as it is not aligned with rationale/aim of learning area	7	1.5%
Content should be removed that is not aligned with who we want our children to become	13	2.7%
There is too much emphasis on Indigenous cultures and perspectives	6	1.3%
Various other learning area specific content that should be removed	43	9.0%
Evidence-based content	**2**	**0.4%**
The included content appears evidence-based	0	0.0%
The included content does not appear to be sufficiently based on evidence and/or needs to be more informed by science/evidence	2	0.4%
Inclusive content	**34**	**7.1%**
The curriculum content is inclusive of diverse learners' interests and capabilities.	1	0.2%
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.	21	4.4%
There are concerns around the age-appropriateness of content	18	3.8%

Manageability (amount of content)	**45**	**9.4%**
Decluttering of content evident, the amount of content is more manageable	0	0.0%
Still too much content/further decluttering needed	45	9.4%
Sequencing of content	**40**	**8.4%**
The sequencing of content has improved	0	0.0%
The sequencing of content needs further improvement	40	8.4%
Achievement standards	**4**	**0.8%**
Achievement standards align with content descriptors	0	0.0%
Achievement standards need better alignment with content descriptors	4	0.8%
Clarity	**26**	**5.4%**
The overall language of the curriculum is clearer and/or easier to understand	0	0.0%
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	11	2.3%
The wording of the content descriptions is clearer and/or easier to understand	1	0.2%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	14	2.9%
The wording of the achievement standards is clearer and/or easier to understand	1	0.2%
The wording of the achievement standards need further clarity	6	1.3%
The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand	1	0.2%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	3	0.6%
Implementation (out of scope)	**39**	**8.1%**
Pedagogy – this overarching theme encompasses feedback about how children should be taught	25	5.2%
Assessment – this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents	7	1.5%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	10	2.1%
Other	**2**	**0.4%**

Comments were provided by 152 respondents. Percentages are based on all 479 Science survey respondents.

Table E2: Aspects that have improved/need further improvement, Science survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Introductory elements	**88**	**18.4%**
The rationale/aims have improved	6	1.3%
The rationale/aims need further improvement	8	1.7%
The strand/sub-strands/core concepts have improved	21	4.4%
The strand/sub-strands/core concepts need further improvement	52	10.9%
The key connections have improved	8	1.7%
The key connections need further improvement	23	4.8%
Content has improved/should remain	**78**	**16.3%**
General views that content has improved	32	6.7%
Content has better alignment with rationale/aim of learning area	15	3.1%
Content has better alignment with who we want our children to become	6	1.3%
The level of emphasis on Indigenous cultures and perspectives is appropriate	23	4.8%
Various other learning area specific content that has improved or should remain	26	5.4%
Content should be added	**42**	**8.8%**
General views that additional or new content should be added	0	0.0%
Additional or new content should be added for better alignment with rationale/aim of learning area	1	0.2%
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)	0	0.0%
There should be more emphasis on Indigenous cultures and perspectives	0	0.0%
Various other learning area specific content that should be added	42	8.8%
Content should be removed	**52**	**10.9%**
General views that there is content that should be removed	15	3.1%
Content should be removed as it is not aligned with rationale/aim of learning area	5	1.0%
Content should be removed that is not aligned with who we want our children to become	2	0.4%
There is too much emphasis on Indigenous cultures and perspectives	8	1.7%
Various other learning area specific content that should be removed	31	6.5%
Evidence-based content	**3**	**0.6%**
The included content appears evidence-based	0	0.0%
The included content does not appear to be sufficiently based on evidence and/or needs to be more informed by science/evidence	3	0.6%
Inclusive content	**68**	**14.2%**
The curriculum content is inclusive of diverse learners' interests and capabilities.	4	0.8%
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.	56	11.7%
There are concerns around the age-appropriateness of content	9	1.9%
Manageability (amount of content)	**68**	**14.2%**
Decluttering of content evident, the amount of content is more manageable	19	4.0%
Still too much content/further decluttering needed	54	11.3%

Sequencing of content	**51**	**10.6%**
The sequencing of content has improved	15	3.1%
The sequencing of content needs further improvement	38	7.9%
Achievement standards	**21**	**4.4%**
Achievement standards align with content descriptors	5	1.0%
Achievement standards need better alignment with content descriptors	16	3.3%
Clarity	**75**	**15.7%**
The overall language of the curriculum is clearer and/or easier to understand	20	4.2%
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	26	5.4%
The wording of the content descriptions is clearer and/or easier to understand	34	7.1%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	9	1.9%
The wording of the achievement standards is clearer and/or easier to understand	5	1.0%
The wording of the achievement standards need further clarity	9	1.9%
The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand	0	0.0%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	1	0.2%
Implementation (out of scope)	**69**	**14.4%**
Pedagogy – this overarching theme encompasses feedback about how children should be taught	37	7.7%
Assessment – this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents	12	2.5%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	26	5.4%
Other	**31**	**6.5%**

Comments were provided by 278 respondents. Percentages are based on all 479 Science survey respondents.

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Appendix F – List of organisations who submitted feedback via email[9]

Organisation Name
Aboriginal and Torres Strait Islander Mathematics Alliance (ATSIMA)
Academy of the Social Sciences in Australia
Act for Kids
ACT Japanese Teachers Network
ACT Principals Association (ACTPA)
Adelaide High School
Adolescent Success
Anglican Church Diocese of Sydney
Art Education Australia
Art Education Victoria
Arts Education Academic Group at the University of Melbourne, Graduate School of Education
Asia Education Teachers' Association
Associated Christian Schools
Ausdance Dance Education Committee
Australasian Fire and Emergency Services Authorities Council
Australasian Institute of Mining and Metallurgy (AusIMM)
Australasian Performing Right Association Limited - Australasian Mechanical Copyright Owners Society (APRA AMCOS)
Australasian Society for Physical Activity (ASPA)
Australia Council for the Arts
Australia's National Research Organisation for Women's Safety
Australia's National Research Organisation for Women's Safety
Australian Academy of Technology and Engineering (ATSE)
Australian Association for Religious Education
Australian Association for Research in Education (AARE) Special Interest Group (SIG) for Health and Physical Education
Australian Association for Teaching of English (AATE)
Australian Association of Christian Schools (AACS)
Australian Business & Community Network
Australian Centre for Career Education
Australian Christian Lobby
Australian Competition & Consumer Commission
Australian Competition and Consumer Commission (ACCC)

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[9] This list includes all organisations which self-identified in the email submissions across all learning areas, general capabilities and cross-curriculum priorities.

Organisation Name
Australian Computer Society (ACS)
Australian Council for Educational Leaders
Australian Council for Health, Physical Education and Recreation New South Wales (ACHPER NSW)
Australian Council of Art and Design Schools (ACUADS)
Australian Council of Engineering Deans (ACED)
Australian Council of State School Organisations (ACSSO)
Australian Councils for Computers in Education (ACCE)
Australian Earth Science Education (AusEarthEd)
Australian Education Union
Australian Fedearl Police
Australian Federation of SPELD (Specific Educational Learning Difficulties) Associations (AUSPELD)
Australian Geography Teachers Association (AGTA)
Australian Historical Association (AHA)
Australian Insitute for Progress (AIP)
Australian Institute for Disaster Resilience
Australian Institute of Geoscientists
Australian Institute of Geoscientists
Australian Literacy Educators Association (ALEA)
Australian Mathematical Sciences Institute
Australian Maths Trust
Australian National Flag Association
Australian Network of Government Languages Schools
Australian Parents Council
Australian Professional Teachers Association (APTA)
Australian Psychological Society (APS)
Australian Publishers Association
Australian Science Teachers Association
Australian Society for Music Education New South Wales (ASME)
Australian Society for Music Education Queensland (ASME)
Australian Society for Music Education South Australia (ASME)
Australian Taxation Office
Australian Teachers of Media
Australian Technology Teacher Educators Network (ATTEN)
Australian Tertiary Outdoor Education Network
Be You - Beyond blue
BHP Billiton
Bloom-ED

Organisation Name
Bravehearts
Burwood Presbyerian Church
Business Council of Co-operatives and Mutuals
Business Educators Australasia
Canberra Academy of Languages
Canberra Declaration
Catholic Education Diocese of Parramatta
Catholic Education South Australia (CESA)
Catholic Education, Archdiocese of Canberra and Goulburn
Catholic School Parents Australia
Catholic Women's League Australia
Catholic Women's League Australia-New South Wales Inc
Catholic Women's League Victoria and Wagga Wagga Inc
Christian Democratic Party
Christian Schools Australia (CSA)
Christian SRE (Special Religious Education) NSW
Commissioner for Children and Young People
Cool Australia
Council for the National Interest
Covenant Christian School
Daniel Morcombe Foundation
Democracy Matters
Department for Education South Australia
Department of Education of Tasmania
Design and Technologies Teacher Association (DATTA)
Domestic Violence Resource Centre Victoria (DVRCV)
Domestic Violence Victoria (DV Vic)
Drama Australia
Drama Queensland
Einstein First project
Ending Violence Against Women Queensland (EVAWQ)
Engineers Australia
eSafety
Executive Council of Australian Jewry
Faculty of Education, Monash University
Faculty of Education, University of Tasmania
Family Planning Alliance Australia

Organisation Name
Family Planning Alliance Australia (FPT), Tasmania
Family planning New South Wales
Family Voice Australia
Florey Electorate SA
Gaven State School
Gender Research Network, University of Newcastle
Geography & History Teachers Association NT
Geography Teachers Association NSW and ACT
Geological Society of Australia (GSA)
Geoscience Australia
Geoscience Pathways Project (GPP)
GetUp
Grok Academy
Health and Wellbeing Queensland
Healthy Greater Bendigo
Hindu Council of Australia
History Teachers Association of Victoria
Home Economics Institute of Australia (Queensland) (HEIA)
IncludeHer Movement
Indigenous Eye Health
Indonesian Teachers' Association of South Australia
Information and communication technology (ICT)Educators NSW
Institute for Judaism and Civilization
Institute of Australian Geographers (IAG)
Institute of Public Affairs
Isolated Children's Parents' Association of Australia
It's time we talked
Kodály Queensland
Language Testing Research Centre (LTRC)
Learning By Doing
Lutheran Education Australia
Making Up Lost Time In Literacy Pty Ltd (MultiLit)
Mareeba State School
Mathematics Advisory Board
Mathematics team in the Department of Education of Tasmania
Maths Association of Victoria (MAV)
Maum Meditation Centre Incorporated

Organisation Name
Melbourne Graduate School of Education The University of Melbourne
Melbourne School of Population and Global Health - The University of Melbourne
Menzies Research Centre
Modern Language Teachers' Association of South Australia
Multicultural Education and Languages Committee (MELC)
Multilit
National Advocates for Arts Education (NAAE)
National Alliance of Christian Leaders
National Association of Services against Sexual Violence (NASASV)
New South Wales Council of Churches
Northern Territory's Department of Education
Office of the Victorian Information Commissioner (OVIC)
Office of the Women in STEM Ambassador
OneSchool Global Australia
ORIGO Education
Our Watch
Outdoors New South Wales and Australian Capital Territory
Outdoors Queensland
Physical Literacy Special Interest Group (PL SIG)
Primary Mathematics Association of South Australia (PMA)
Qld Special Education Curriculum Cluster
Queensland Association of Mathematics Teachers
Queensland Association of Special Education Leaders (QASEL)
Queensland Ballet
Queensland Department of Education
Queensland Economic Teachers Association
Queensland Family and Child Commission (QFCC)
Queensland Global Citizenship Education Network (QGCEN)
Queensland History Teachers' Association
Queensland Private Enterprise Centre
Queensland Society for Information Technology in Education (QSITE)
Queensland Society for Information Technology in Education Inc. (QSITE)
Ramsay Centre for Western Civilisation
Reconciliation Australia
Royal Geographical Society of Queensland (RGSQ)
Royal Historical Society of Victoria (RHSV)

Organisation Name
Royal Society of St George
Rule of Law Education
School of Education and Professional Studies, Griffith University
School of Education and Tertiary Access at University of the Sunshine Coast
School of Languages SA
Science & Technology Australia
Science of Language and Reading Lab ((SOLAR Lab)
Science Teachers' Association of Queensland (STAQ)
Social and Citizenship Education Association of Australia (SCEAA)
Social and Citizenship Educators Association of Queensland (SCEAQ)
South Australian English Teachers Association
Speech Pathology Australia
St Clare's College
Steiner Education Australia
Student representative group - Adelaide High School
Suicide Prevention Australia
Tasmanian Art Teachers Association (TATA)
Tasmanian Association for the Gifted
Tasmanian Society for Information Technology in Education (TASITE)
Teach Us Consent
Teacher Earth Science Education Programme (TESEP)
Tertiary History Educators Australia (THEA)
The Arts Education Academic Group at the University of Melbourne
The Arts Education Academic Group at the University of Melbourne, Graduate School of Education
The Australian Association for Adolescent Health
The Centre for Inclusive Education (C4IE)
The eSafety Commissioner
The Hutchins School Tasmania
The Institute of Technology Education (iTE)
The Mareeba State School
The Mathematical Association of Western Australia
The Minerals Council of Australia (MCA)
The Queensland Government's Department of Tourism
The Queenwood School for Girls
The Tasmanian Association for the Teaching of English (TATE)
The Tasmanian Society for Information Technology in Education (TASITE)
The University of New South Wales Tax Clinic

Organisation Name
True Relationships & Reproductive Health
University of Queensland
University of Tasmania
University of Western Australia
Victorian Commercial Teachers Association (VCTA)
Victory Life Centre
Visual Arts and Design Educators Association New South Wales (VADEA NSW)
Voiceless Limited
Water Services Association of Australia
Wellbeing SA
Western Australia Health Promoting Schools Association.
Western Australian Primary Principals' Association (WAPPA)
Whitlam Institute
Women's Health East
Women's Health Goulburn North East
Young Women's Christian Association of Canberra (YWCA Canberra)

Appendix G - Overview of individual jurisdictional feedback

Tasmania

Positive feedback

- Overall, Tasmania's position on the changes to Science is positive.

- The inclusion of inquiry questions is valued and it is felt that the cognitive verbs in Content descriptions also make it clear that "science is learnt through inquiry".

- It is noted that Science aligns well with Mathematics, supporting integrated approaches to STEM.

- The explicit inclusion of First Nations perspectives into the Content Descriptions and not only the elaborations was positively received.

Aspects that need further revision and/or consideration

- The Year 10 content "seems more crowded".

- There is no advice or provision for teaching Science in multi-year classes.

Queensland

Positive feedback

- The rationale is clear and frames the importance of Science positively.

- The inclusion of key connections and key considerations support teachers to develop school-wide and year level plans.

- The content descriptions have been refined to clearly articulate the depth and breadth of content to be taught.

- The structure and organisation of the Achievement standards provides clarity for teachers.

- The separation of content from each sub-strand in the Science understanding strand into individual sentences in the Foundation to Year 3 Achievement standards is an improvement.

- The strands and sub-strands are effective content organisers.

- The core concepts is helpful for teacher planning.

- Connections with General Capabilities and Cross curriculum priorities are evident, although research skills could receive more attention.

- The year level descriptions provide a clear overview of the year with alignment to the achievement standard without excessive repetition.

- Key considerations are supported.

- Achievement standards are clear and helpful for assessment.

- In general, the cognitive demand is age appropriate.

- There is strong alignment between the core concepts and the content descriptions, and between the content descriptions and the achievement standards.

- Content descriptions are clear and align with the core concepts and articulate essential knowledge, understanding and skills.

Aspects that need further revision

- The intent of the core concepts as an additional set of organising concepts to the key ideas is not clear, and potentially devalues the key ideas.

- There is not a consistent progression of cognitive demand from Foundation to Year 10.

- Some content elaborations are more complex and overly specific, which increases demands on generalist and non-specialist teachers. Examples are provided.

- Including Aboriginal and Torres Strait Islander Histories and Cultures elaborations in every year level requires teacher professional development.

- Little decluttering is evident and more significant reduction is needed. Possible solutions are suggested.

- There is a need for an overarching framework across the Science curriculum to improve alignment and progression.

- The Aims should better reflect the priority placed on inquiry.

- The term 'Western knowledge' is seen as unhelpful.

- Connections with some learning areas could be strengthened e.g., HASS.

- The privileged position of the inquiry questions in the year level description could be interpreted to mean they are mandatory and an exhaustive list. Some sentence stems need improvement.

- The use of 'or' in Achievement standards could lead to inconsistency.

- Progression is not always logical within banded content; examples are given.

- Cognitive developmental progression is inconsistent; examples are given.

- The elaborations supporting the cross-curriculum priority Sustainability are engaging and mostly attainable.

- Content elaborations for Science as a human endeavour include some with sociopolitical intent that detract from the learning of scientific content and create time pressures around planning and teaching; examples are given.

Victoria

Positive feedback

- Content across F – 6 has been substantially reduced.

- Inclusion of inquiry questions in year level descriptions is welcomed.

- The Aboriginal and Torres Strait Islander cross-curriculum priority (CCP) has been strengthened in the elaborations.

- Many elaborations are appropriate and informative.

Aspects that need further revision

- Some terminology requires more clarity; specific examples are given e.g., 'natural and physical phenomena'

- The Achievement standards need more refinement to better foreground expectations of students, convey developmental progression, align cognitive expectations with Content descriptions and elaborations, and merge SHE and SI.

- The Sustainability CCP is not sufficiently evident.

- General capabilities could be strengthened in the elaborations.

- The order of SHE, Science Understandings and SI is inconsistent.

- It is not clear how key ideas and key concepts are linked within each strand of the proposed curriculum.

- Suggestions are made to further refine inquiry questions to be more age appropriate.

- Some elaborations need further refinement; specific examples are provided.

- Connections between Mathematics and Science need strengthening and better alignment throughout the curriculum; specific examples are provided.

- The relationship of sustainability to science needs more specificity.

New South Wales

NSW has not provided specific feedback for Science, instead providing feedback only on those learning areas about which there were concerns. This indicates that there were no particular concerns in relation to the revised Science curriculum. In its submission overview, NSW indicated that, apart from those learning areas about which there were still concerns:

- Essential learning is more explicit

- Content descriptions and elaborations have been refined

- Achievement standards have improved

- Sequencing of learning has improved.

- Rationales clarify the value of the learning area

- Key Connections is a helpful addition.

South Australia

Positive feedback

- Content descriptions are clearer about what is to be taught and to what depth. Year 10 has been decluttered and 7 – 10 is mostly less ambiguous.

- The Science Understanding sub-strand classifications provide clarity for teachers.

- Retaining Science as a human endeavour from F – 10 is welcomed.

- Content descriptions provide helpful guidance regarding Aboriginal and Torres Strait Islander Histories perspectives.

- Inquiry questions are valued.

- The Rationale is clearer, on the whole.

- Key Connections are strongly supported, especially and Torres Strait Islander Histories and Cultures and sustainability.

- Year level descriptions are mostly improved.

Aspects that need further revision

- Further decluttering is needed, especially in F – 3. The proposed rearrangement may detract from deep engagement and mean that some students are not exposed to all sub-strands. Specific suggestions are provided.

- More clarity is needed around developmental progressions. Recommendations are made.

- Some content that has been removed should be returned. Examples are given.

- The Science as a human endeavour strand should be returned to its original form.

- Science careers should be reinstated in the Aims.

- Relationships between strands need to be clearer.

- Tighter alignment is needed between the Achievement standards and the content descriptions, and the standards for SHE need further refinement.

- Further refinement is needed to some content descriptions; examples are given, including suggestions to improve language use and terminology.

- At times the elaborations do not explicitly reflect the concepts described the proposed content descriptions; examples are given.

Northern Territory

Positive feedback

- Removed content has increased manageability.

- Resequencing of content has improved conceptual progression.

- Additional content to foreground critical and creative thinking in the early years has improved conceptual progression.

Aspects that need further revision

- Consistent conceptual progression across all the Sciences from F-3 is needed. For example, Earth and Space Science is removed twice and Physical Sciences not at all.

- Science as a Human Endeavour needs further alignment across F-6. Key ideas from this strand could be included as elaborations where appropriate.

- Key ideas of the learning area could be more explicitly aligned to relevant content descriptions and content elaborations e.g., exploring First Nations Australians' artefacts and heritage sites (AC9S8I02_E2) is best explored in the context of Year 6 and the rock cycle.

Western Australia

Positive feedback

- Some re-sequenced and additional content is endorsed; specific examples are given across F – 10 e.g., AC9SFU01 is well placed in Foundation because the 'hands on' content appeals to the natural curiosity of children of this age; including multimodal texts in Year 7 and Year 8.

- Year/band level descriptions provide a clear overview of the learning that students should experience at the year level.

- The addition of inquiry questions stimulates classroom discussion.

- The inclusion of 'hypotheses' in Year 7 was well received.

- Some content has been reworded with more clarity; examples are given throughout.

Aspects that need further revision

- Some content that has been removed should be reinstated; specific examples are given across F – 10 e.g., biological science in Year 3; classification in F – 6.

- Some content is regarded as too advanced for some year levels; specific examples are given across F – 10.

- Some terminology and concepts require more clarity; specific examples are given e.g., 'familiar scaled instruments'; the role of digital technologies; 'intended audiences'. Possible alternatives are suggested throughout.

- In some instances, the standard does not align with content; specific examples are given e.g., Year 3; Year 6 AC9S6I03; Year 8 AC9S8U01

- Suggestions for content that could be removed to increase manageability are provided across F – 10. It is felt that in e.g., Year 6, the amount of content makes it difficult for students to achieve the standard.

- Some concerns are raised about resourcing implications in relation to some content e.g., AC9S6U02 in Year 6; access to digital technologies.

- The ability to use scientific language needs to be evident in Year 5 and Year 6, so content descriptions should be more specific than just 'language features'.

- Including intercultural considerations in fieldwork is problematic as not all students have access to an authentic context (Year 7 Achievement standard).

Independent Schools Australia

Positive feedback

- The revised Science curriculum was positively received by the majority of stakeholders.

- A separate Foundation year is welcomed and alignment with the early years framework is evident in the language used.

- Content descriptions are clearer.

- Core concepts are seen as clearer and foregrounding hierarchies in content.

- Core concepts and key ideas seem to be better aligned.

- The revised curriculum appears more streamlined. In F – 4, the removal of content allows for deeper learning.

- Overall, language is clearer.

- Alignment with senior subjects is more evident.

- Inquiry questions are a welcome addition.

- Inclusion of Indigenous perspectives is welcomed.

Aspects that need further revision

- Concern that from F – 4, too much has been removed, detracting from depth and rigour.

- Further decluttering could be achieved.

- Achievement standards describe actions, not standards, and are therefore not helpful for making judgements.

- Historical aspects have been foregrounded at the cost of Science application.

- The developmental progression between 7 – 10 is too great.

- Some concepts may be too advanced for some year levels e.g., Year 8 energy transfer.

- Some information may be missed e.g., rock cycle in Year 6.

- More support needed to link to CCP Sustainability.

National Catholic Education Commission

Positive feedback

- Overall, the revised curriculum was positively received by stakeholders.

- Use of cognitive verbs is supported.

- Inclusion of First Nations contributions is welcomed.

- Inquiry questions are welcomed.

- Rationale and Aims are clear and align with core concepts.

- Organisation structure remains coherent.

- Renaming of strands and sub-strands is supported.

- Key connections are clear and well linked to General capabilities and CCPs.

- Key considerations are welcomed.

- Year level descriptions are clear and connect well to core concepts and key ideas.

- Achievement standards are clearer, show developmental progression and are better aligned with content descriptions.

Aspects that need further revision

- Concerns that moving some content to lower year levels could inappropriately increase the cognitive demand and adversely affect progression of learning across F – 10 and into senior subjects.

- More support and resources are needed, particularly in relation to integrating First Nations perspectives and how to connect core concepts and key ideas.

- 'Observation' should be included in Rationale/Aims.

- More detail could be provided for teachers in how to take the inquiry questions and turn them into questions that can be tested empirically.

- Inconsistencies with number of content descriptions in F-2 across sub-strands mean it is not clear how teaching time should be allocated.

- Suggestions are made for reinstating or resequencing content in some year levels to be more age appropriate and reflect better development progression.

- Some elaborations seem to bring in new concepts and the connection with intended learning is unclear.

- There is a risk that a year could elapse before a sub-strand is engaged with again. Specific examples are given.