



Senior Science

Stage 6

Draft Writing Brief Consultation Report

February 2016

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1. Background information

The preparation of the *Senior Science Stage 6 Draft Writing Brief* took into account the broad directions for the learning area, which were developed following public consultation and endorsed by BOSTES in December 2014.

BOSTES conducted consultation in Term 4, 2015 to engage stakeholders in the syllabus development process and to seek their feedback on options and proposals in the draft writing brief.

The consultation program included:

- a meeting of the Years 11–12 Board Curriculum Committee for Science on 18 November 2015
- afternoon consultation meetings at:
 - Parramatta on 26 October 2015
 - Albury on 27 October 2015
 - Port Macquarie on 29 October 2015
 - Merimbula on 2 November 2015
 - Hurstville on 4 November 2015
 - Asquith on 5 November 2015
 - Sydney on 26 November 2015
- an online survey on the BOSTES website from 19 October to 29 November 2015
- written submissions from:
 - NSW Department of Education
 - Catholic Education Office Sydney
 - Communities of Catholic Schools - Diocese of Broken Bay
 - Association of Independent Schools of NSW
 - Association of Heads of Independent Schools of Australia
 - NSW Teachers' Federation
 - Science Teachers' Association of NSW
 - University of Sydney Faculty of Science
 - Blue Mountains Grammar School
 - Sydney Grammar School
 - 2 individuals.

Professional associations and schooling sectors conducted a range of activities during the consultation period to inform feedback to BOSTES.

Feedback from consultation was analysed and informed revisions to the draft writing brief. The final writing brief will be used to develop the draft syllabus.

2. Executive summary

The *Senior Science Stage 6 Draft Syllabus Writing Brief Consultation Report* provides a description of the consultation process and a summary and analysis of feedback received. The summary analysis outlines confirmation of the general directions of the draft syllabus writing brief as well as key matters raised and proposed actions and amendments.

The Consultation Report presents data and findings gathered through 71 survey responses, 12 written submissions, a Board Curriculum Committee (BCC) meeting and 7 consultation meetings.

The *Senior Science Stage 6 Syllabus Draft Writing Brief* provided three course options for analysis and feedback. There was strong support for depth studies to be included in Senior Science course. Consultation feedback indicated that Option 2 with its depth study components, was the preferred option to cater for the learning needs of a broad range of students. Option 3 was also identified as catering for the diversity of learners.

Respondents suggested that the Senior Science course be renamed and represented as a multidisciplinary science course that complements the learning in the other Science disciplines.

Other matters raised included the need for further refinement of the rationale, aims, objectives and outcomes, a reduction in the content to allow for depth of study, and to support students learning about contemporary science as it is practised. Respondents also supported development of an extension course/s in Science. It was suggested that assessment requirements be clarified, and learning materials would be required to support implementation.

Key matters

The key matters to emerge from the consultation included:

- Option 2 is preferred; however, there is strong support for Option 3 with its depth study component to cater for the diversity of learners
- the scope and requirements of assessment of depth studies need clarification
- the name of the Senior Science course should be changed to better represent its purpose and relationship to the other disciplines
- the rationale, aim and objectives require revision to provide clarity and consistency
- Content should be less prescriptive and include contemporary, practical-based learning opportunities
- Science Life Skills outcomes and content should be developed and align with the Senior Science course.

Actions in response to key matters

- Aspects of Options 2 and 3, including depth studies, will be incorporated.
- The nature, scope and structure of depth studies, including investigative projects, will be clarified.
- A change of course name will be considered.
- The rationale, aim and objectives will be reviewed and amended to provide clarity and consistency.
- Content will be reduced to provide opportunities for deeper learning through a focus on practical investigations.
- Life Skills outcomes and content will be developed from and align with the objectives of the Senior Science course.

A summary of key matters and related actions is contained in Section 4 of this report.

3. Summary of respondents

Consultation stakeholder and teacher meetings

1 Board Curriculum Committee (BCC), 7 teacher meetings

BCC members	8	Government sector	35	Catholic sector	17
Independent sector	13	Other	6		

Online survey respondents

71 online survey responses

Respondent:					
Academic	0	Parent	0	Pre-service teacher	0
Principal	0	School executive	7	School faculty	2
Student	0	Teacher	59	Other	3
I am:					
An Aboriginal person	1	A Torres Strait Islander person	0		
An Aboriginal and Torres Strait Islander person	0	Not an Aboriginal and/or Torres Strait Islander person	70		
Sector:					
Government	35	Catholic	17		
Independent	13	Non-school based	6		
Area of NSW:					
Metropolitan	31	Regional	40		
Number of people contributing to this survey:					
1	63	2–5	5	6 or more	3

4. Key matters

Key matters	Actions
<p>Option 2 is preferred; however, there is strong support for Option 3 with its depth study component to cater for the diversity of learners.</p>	<p>Aspects of Options 2 and 3, including depth studies, will be incorporated.</p>
<p>The scope and requirements of assessment of depth studies need clarification.</p>	<p>The nature, scope and structure of depth studies, including investigative projects, will be clarified.</p>
<p>The name of the Senior Science course should be changed to better represent its purpose and relationship to the other disciplines.</p>	<p>A change of course name will be considered.</p>
<p>The rationale, aim and objectives require revision to provide clarity and consistency.</p>	<p>The rationale, aim and objectives will be reviewed and amended to provide clarity and consistency.</p>
<p>Content should be less prescriptive and include contemporary, practical-based learning opportunities.</p>	<p>Content will be reduced to provide opportunities for deeper learning through a focus on practical investigations.</p>
<p>Science Life Skills outcomes and content should be developed and align with the Senior Science course.</p>	<p>Life Skills outcomes and content will be developed from and align with the objectives of the Senior Science course.</p>

5. Analysis

5.1 Rationale

Summary

The majority of survey respondents agreed that the proposed rationale describes the nature of the course, explains its purpose in the curriculum and reflects a contemporary view.

Some respondents indicated that the rationale needs further clarification in relation to its target audience.

Feedback affirming the rationale

Feedback	Sources
The rationale is appropriate, providing a sound analysis and a shift to inquiry learning.	AHISA BCC DoE Hurstville (CM) STANSW Submission 3

Key matters and actions

Key matters	Sources	Actions
The course should provide opportunities for the study of contemporary science and maintain an emphasis on working scientifically.	AIS CEOSYD DoE Survey (x4)	The rationale will be reviewed to address contemporary science and working scientifically.

5.2 Aim

Summary

The majority of the respondents agreed that the proposed aim provides a statement of the overall purpose of the syllabus.

Feedback affirming the aim

Feedback	Sources
The aim is appropriate for the nature of this course.	DoE STANSW Submission 3 Survey (x2)

Key matters and actions

Key matters	Sources	Actions
It is uncertain how well the aim is reflected in the content.	CCSOBB CEOSYD Submission 4 Survey (x2)	The aim will be reviewed to align with the content.

5.3 Objectives

Summary

The majority of respondents agreed that the proposed objectives define in broad terms the knowledge, understanding, skills, values and attitudes developed through studying this course.

Some respondents commented that the objectives require refinement, and that more detail is required.

Feedback affirming the objectives

Feedback	Sources
The Senior Science objectives are well defined.	DoE Albury (CM)

Key matters and actions

Key matters	Sources	Actions
The objectives need to be more explicit.	AIS CEOSYD Survey (x4) USYD	The objectives will be reviewed for clarity and purpose. However, the outcomes provide further detail of objectives.
The objectives do not clearly identify a continuum of learning.	AIS CEOSYD DoE	The objectives will be reviewed to strengthen the continuum of learning

5.4 Outcomes

Summary

The majority of respondents agreed that the sample of outcomes indicate the knowledge, understanding and skills expected and that they are derived from the objectives of the syllabus.

Many respondents commented that Life Skills outcomes and content should be developed and based on practical applications of science.

Feedback affirming the outcomes

Feedback	Sources
The sample of outcomes is suitable and reasonable for the Senior Science course.	AHISA BCC DoE Merimbula (CM) STANSW Survey (x1)

Key matters and actions

Key matters	Sources	Actions
The Senior Science outcomes should complement those in the other science courses.	Hurstville (CM) Parramatta (CM) Port Macquarie (CM) Survey (x3)	The outcomes will be reviewed for alignment with other science courses.
Life Skills outcomes and content should be developed to align with this course.	Survey (x10) Sydney (CM)	Life Skills outcomes and content will be developed from the syllabus objectives and align with topics and course content as appropriate.

5.5 Diversity of learners

Summary

Most respondents commented that depth studies, open-ended investigations and other experimental work provide opportunities to cater for the diversity of learners.

Several respondents commented that prescribed contexts hindered the ability of teachers to provide for the diversity of learners and that manufactured contexts may not maintain currency and relevance.

Many respondents suggested the development of Life Skills outcomes and content to align with Senior Science.

Feedback about the diversity of learners and Life Skills outcomes and content

Feedback	Sources
The inclusion of contemporary practical-based learning to cater for student diversity is supported.	Albury (CM) CCSOBB CEOSYD DoE Hurstville (CM) NSWTF Port Macquarie (CM) Survey (x23)
The inclusion of depth studies allows for authentic learning and provides opportunities to cater for the diversity of learners and depth of study.	Albury (CM) Asquith (CM) CEOSYD DoE Hurstville (CM) Merimbula (CM) Parramatta (CM) Sydney (CM) Survey (x21) USYD
Life Skills outcomes and content should be developed to align with content and to develop the continuum from Years 7–10.	AIS BCC CEOSYD Submission 3

Key matters and actions

Key matters	Sources	Actions
A course structure for students not seeking an ATAR and Life Skills outcomes and content should be provided.	AIS Albury (CM) BCC CEOSYD DoE Hurstville (CM) Merimbula (CM) NSWTF Parramatta (CM) Submission 3 Survey (x14)	A range of course options will be developed including Life Skills outcomes and content.
The content should be reduced to provide opportunities to cater for the diversity of learners, including depth of learning, flexible approaches and the promotion of practical science.	AIS CEOSYD DoE	Content will be reduced to promote deep engagement and learning and provide opportunities for the practical aspects of science.
Life Skills outcomes and content should be developed to establish a continuum of learning from Years 7–10 Life Skills outcomes and content.	AIS Survey (x2)	Life Skills outcomes and content will be developed to strengthen the continuum from Year 7–10 Life Skills outcomes and content.

5.6 Course structure and options

Summary

Preferred option

Consultation feedback supported Option 2. Respondents indicated that Option 2 provided flexibility and was relevant and engaging. Some respondents who chose Option 3 expressed concern that the depth study component in Option 2 would be beyond the capabilities of some of the students who choose the course.

Course content

The majority of survey respondents agreed that the sequence of content and areas of study presented was logical, appropriate and contemporary.

Many respondents agreed that the structure and content provides flexibility to meet the needs and interests of the diversity of students.

A common multidisciplinary unit

Most survey respondents indicated that a multidisciplinary unit was not required as this was well catered for in Stage 4 and Stage 5 Science.

Depth studies

Most survey respondents agreed that depth studies, incorporating investigative projects, provide opportunities for flexible teaching and learning, and to cater for the diversity of learners by exploring ideas in depth and in different ways.

Other structures and options

Many survey respondents proposed a course structure be developed for students not seeking an ATAR.

The majority of survey respondents indicated that the course structures and options provided were appropriate.

Feedback affirming the course structure and options

Feedback	Sources
Course content The course content is appropriate and contemporary.	Albury (CM) Asquith (CM) BCC Hurstville (CM) Merimbula (CM) Parramatta (CM) Port Macquarie (CM) Survey (x26)

Feedback	Sources
<p>Depth studies Option 2, with its depth study component, has a structure that would provide opportunities for all students to develop the skills of scientifically literate citizens.</p>	<p>Albury (CM) Asquith (CM) BCC CEOSYD DoE Hurstville (CM) Merimbula (CM) Parramatta (CM) Survey (x21) Sydney (CM) USYD</p>

Key matters and actions

Key matters	Sources	Actions
<p>Course content The proposed new options, with depth studies, may not suit the current candidature in Senior Science.</p>	<p>DoE NSWTF Parramatta (CM) Submission 1 Survey (x4)</p>	<p>The new options, including depth studies, will be designed to cater for all students.</p>
<p>The content must be reduced and made less prescriptive to allow students to investigate contemporary science in greater depth.</p>	<p>AIS CEOSYD DoE Hurstville(CM) NSWTF Port Macquarie (CM) Survey (x10) USYD</p>	<p>The course content will be reduced to provide opportunities for depth of study.</p>
<p>The course content needs to be rigorous, contemporary and incorporate inquiry-based research in order to engage students.</p>	<p>CCSOBB NSWTF Submission 2 Survey (x2) USYD</p>	<p>Course content will be developed to promote rigour and contemporary approaches.</p>
<p>Depth studies The nature, length, implementation, logistics and assessment requirements of the proposed depth studies are not clear.</p>	<p>AIS BCC CEOSYD DoE NSWTF Submissions 1, 3, 4 Survey (x7) Sydney (CM) USYD</p>	<p>Details about the nature, design and structure of depth studies will be provided during draft syllabus development.</p>

Key matters	Sources	Actions
Other structures and options The development of structures within the course for students not seeking an ATAR is supported.	AIS Asquith (CM) BCC DoE Hurstville (CM) Port Macquarie (CM) Submission 3 Survey (x8)	Course options and structures will be developed during syllabus development.

5.7 Assessment and reporting

Summary

A number of respondents commented that resources for school-based assessment should be developed to assist with the implementation of the course.

Some respondents indicated that a single 3-hour examination for the course was not an appropriate form of external assessment for Senior Science.

There was support for some aspects of assessment to be completed online, and for assessment in Year 11 to contribute towards the HSC.

Feedback affirming the information on assessment and reporting

Feedback	Sources
Current assessment processes are adequate and ensure equity.	AIS Survey (x6)
Online assessment strategies should be investigated.	Survey (x6)

Key matters and Actions

Key matters	Sources	Actions
Clear assessment guidelines for investigative projects and depth studies are required.	CEOSYD DoE NSWTF Submission 3 Survey (x8)	Course assessment policies, procedures and specifications, including depth studies will be developed with the draft syllabus.
Clarification is needed about Year 11 and Year 12 assessment requirements, including for practical components.	DoE	
The importance of the assessment of the practical components of Senior Science should be enhanced.	AIS	
The use of online-based assessments may create inequities.	AIS DoE Survey (x10)	The development of online assessment opportunities will be considered.

5.8 Other comments

Summary

The majority of respondents agreed that the draft writing brief provides a sound basis for developing the course.

Feedback affirming the draft writing brief

Feedback	Sources
The draft writing brief outlines an exciting proposal providing flexibility for schools and broader thinking about how Senior Science is delivered.	DoE Survey (x5)

Key matters and actions

Key matters	Sources	Actions
The removal of the present exclusion in regard to Senior Science students selecting other science disciplines in Year 11 must be considered.	AIS BCC DoE Submission 3	The removal of this restriction will be considered.
Senior Science should be renamed to remove past interpretations of its target student group.	Asquith (CM) CEOSYD Hurstville (CM) Parramatta (CM) Sydney (CM)	The name of Senior Science will be changed to position it as a new course.
The ability for students to transfer into Senior Science after completing any Year 11 Science subject must be retained.	AHISA AIS Survey (x1)	The ability for students to transfer into Senior Science will be retained.
Design the course structures around the current 3-term Year 11 and 4-term Year 12 time scales.	AIS CEOSYD DoE Survey (x2)	Course content will be reduced to provide time for depth of learning and practical activities.

6. Quantitative analysis of survey responses

Note: Due to rounding, some percentages may not total 100%.

Survey Item	Number of responses	Strongly agree	Agree	Disagree	Strongly disagree	Yes	No
Rationale							
1. The proposed rationale describes the nature of the course in broad terms and explains its purpose in the curriculum.	64	16%	81%	3%	0%		
2. The proposed rationale reflects a contemporary view of the course.	64	20%	77%	3%	0%		
Aim							
3. The proposed aim provides a statement of the overall purpose of the syllabus.	62	23%	71%	6%	0%		
Objectives							
4. The proposed objectives define in broad terms the knowledge, understanding, skills, values and attitudes to be developed through study in this course.	61	13%	79%	8%	0%		
Outcomes							
5. The sample of outcomes is appropriate.	60	10%	78%	12%	0%		
Course structure and options							
6. Option 1 is preferred.	8					16%	
7. Option 2 is preferred.	22					45%	
8. Option 3 is preferred.	19					39%	
9. The sequence of content and areas of study presented in the options are logical and appropriate.	51	14%	75%	10%	2%		
10. The content and areas of study in the options are contemporary.	50	20%	70%	8%	2%		
11. The content and areas of study provide learning opportunities to prepare students to undertake further study.	50	12%	76%	12%	0%		

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Survey Item	Number of responses	Strongly agree	Agree	Disagree	Strongly disagree	Yes	No
12. The structure and content provides flexibility to meet the needs and interests of the range of students.	50	22%	62%	14%	2%		
13. A common multidisciplinary unit to commence the study of Stage 6 Science courses would focus students on the disciplines, and further develop common skills to assist students to choose appropriate discipline pathways	50	20%	52%	18%	10%		
14. Depth studies incorporating investigative projects provide opportunities for students to apply their scientific knowledge, understanding and skills.	49	35%	51%	12%	2%		
15. Is there another structure or option for Senior Science that BOSTES should consider?	47					38%	62%
General							
16. The draft writing brief provides a sound basis for developing the final writing brief, which is the blueprint for the development of the draft syllabus.	48	17%	73%	10%	0%		

7. Respondents

7.1 Consultation meetings

Afternoon consultation meetings

(code: CM)

Location	Date (2015)	Total
Parramatta	26 October	73
Albury	27 October	8
Port Macquarie	29 October	14
Merimbula	2 November	5
Hurstville	4 November	60
Asquith	5 November	39
Sydney	26 November	26

Board Curriculum Committee consultation meeting at the BOSTES on 18 November 2015

(code: BCC)

Name	Organisation
Dr Timothy Wright	Chair
Mr Vatche Ansourian	NSW Department of Education
Ms Olivia Belshaw	Science Teachers' Association of NSW
Mr Robert Farr	Association of Independent Schools of NSW
Ms Regina Menz	Catholic Education Commission NSW
Mr Mike Morgan	NSW Teachers Federation
Mr Paul Reilly	NSW Department of Industry – TAFE NSW
Mr Tim Spencer	Federation of Parents and Citizens' Association NSW

7.2 Written submissions

Organisations, groups and individuals	Code
Association of Heads of Independent Schools of Australia	AHISA
Association of Independent Schools of NSW	AIS
Blue Mountains Grammar School Science Faculty	Submission 1
Catholic Education Office Sydney	CEOSYD
Communities of Catholic Schools - Diocese of Broken Bay	CCSOBB
NSW Department of Education	DoE
NSW Teachers' Federation	NSWTF
Science Teachers' Association of NSW	STANSW
Sydney Grammar School Science Faculty	Submission 2
University of Sydney Faculty of Science	USYD
Individual Respondent	Submission 3
Individual Respondent	Submission 4