NSW Education Standards Authority

Engagement Report for Software Engineering Stage 6 Draft Syllabuses, Assessment and Examination Requirements

November 2022

Contents

Introduction

The NSW Education Standards Authority (NESA) has developed the *Software Engineering 11–12 Syllabus*. The development of this syllabus commenced before the NSW Government response to the NSW Curriculum Review in 2020.

The purpose of this engagement report is to document the feedback received for Software Engineering (formerly *Software Design and Development*), and for assessment and examination requirements, including the actions taken by NESA in response to the feedback.

In 2018 a review of the current syllabus for Software Design and Development (SDD) was undertaken. Initial consultation on the *Software Engineering 11–12 Draft Syllabus* commenced on 29 July 2019. Stakeholders participated in public and targeted consultation activities. In 2021, targeted consultation was conducted to affirm the alignment of the draft syllabus with the Curriculum Reform priorities. The process of alignment in response to the recommendations of the 2020 NSW Curriculum Review was guided by the revised syllabus development process.

Consultation methodology

NESA's initial consultation on the *Software Engineering 11–12 Draft Syllabus* and *Assessment and Examination Requirements* began on 1 July 2019 and concluded on 25 August 2019. Information about the consultation process and opportunities to provide feedback were made available on the NESA website, in NESA News, and in tweets from the NESA and Curriculum Inspector accounts. Further targeted consultation took place in October 2021 to confirm the alignment of the draft syllabus with the Curriculum Reform priorities and objectives.

Specific information regarding consultation activities is provided in the appendices.

Technical Advisory Group

The role of the Technical Advisory Group (TAG) is to provide expert advice and to quality assure the outcomes and content of the draft syllabus.

Each TAG member:

- received successive drafts of the syllabus and provided detailed feedback on each revision
- provided advice about Software Engineering 11–12 outcomes and content in relation to their suitability, relevance and accuracy.

Appendix 1 lists the TAG members for Software Engineering 11–12.

Public consultation

Online survey

In 2018 an online survey was used to collect feedback from stakeholders on the *Software Design and Development 11–12 Syllabus*. Survey respondents had the opportunity to provide feedback which was collected as both quantitative and qualitative data. Ninety-seven survey responses were received (see Appendix 2 and Appendix 3).

Face-to-face consultation meetings

In the initial consultation period, public consultation meetings were held to provide stakeholders with information about the draft syllabus and an opportunity to respond to syllabus changes. Qualitative feedback was collected at these consultation meetings.

Six public consultation meetings were held in regional and metropolitan areas between 1 August 2019 and 22 August 2019 (see Appendix 6). The meetings were attended by 69 people for the *Software Engineering 11–12 Draft Syllabus*.

The agenda for face-to-face meetings included a briefing from NESA officers involved in leading the syllabus development process. Following the briefing, participants were invited to ask questions and provide feedback which was recorded in field notes or provided by participants through annotations on the draft syllabus.

Written submissions

In the initial consultation period, stakeholders were invited to provide written submissions. The

submissions required stakeholders to identify their name and/or organisation and contact details. There were no specific NESA requirements regarding the format or content of written submissions. Sixteen written submissions were received (see Appendix 7).

Targeted consultation

Online survey

In 2021, an online survey was used to collect feedback on the *Software Engineering 11–12 Draft Syllabus* from 4 TENs teachers with relevant expertise. Survey respondents had the opportunity to provide feedback collected as both quantitative and qualitative data. Four survey responses were received (see Appendix 4 and Appendix 5).

Focus groups

Targeted focus groups were held to ensure feedback was inclusive of the diversity of student learners (see Appendix 8).

Targeted consultation meetings took place between 1 July 2019 and 25 August 2019, and involved:

- Aboriginal Education stakeholders
- Educational sectors
- Professional teaching associations
- Students

Further targeted consultation meetings took place in 2020 and 2021 involving:

- Academics
- Assessment experts
- Examination committee
- Industry experts
- Professional teaching associations
- Teachers from the Teacher Expert Networks (TENs) and their associates

The agendas for the targeted focus group meetings included a briefing from NESA officers and participants were invited to provide feedback.

Board Curriculum Committee

The purpose of the previous Board Curriculum Committees (BCC) was to review syllabuses and recommend syllabus documents to the then NESA Curriculum Committee for endorsement. The BCC for Computing Technology provided advice to the NESA Curriculum Committee regarding the quality of the Software Engineering 11–12 syllabus in relation to the writing brief noting that:

- agreed processes had been followed
- due attention had been given to the views identified during consultation
- the syllabus development process had been followed.

In 2019, a meeting was held to confirm that processes were followed and to provide feedback on the draft syllabus (see Appendix 9). At their final meeting in August 2019, the BCC recommended the syllabus to the then NESA Curriculum Committee for endorsement.

Feedback from sectors

In November 2021, the Sector Reference Group (SeRG) was informed of the progress of syllabus development and consulted on matters relating to syllabus implementation. A number of written submissions were received from school sectors, providing constructive and valuable feedback, which further refined the syllabus after the consultation period.

Reporting on consultation

The data generated from consultation provided quantitative and qualitative data which were analysed separately. The quantitative data was analysed to identify trends. The qualitative data, including survey feedback and meeting notes, was analysed to identify recurrent themes. The key themes and trends are identified in this engagement report.

The strengths and key matters presented in this report were determined based on the relevance of the feedback to the scope of the project, and the salience and frequency of the matters raised. Minor matters raised during consultation, such as edits, factual checks and terminology, are not represented in the report.

Governance

The NESA Curriculum and Credentials Committee (CaCC) exercises a delegated function on behalf of the Board, primarily to endorse syllabuses developed by NESA for the Minister's approval, as part of the program of Curriculum Reform.

The Committee endorses the syllabuses and provides advice to the Minister regarding the syllabus submitted for approval. It also provides advice to the Board on processes for syllabus review and development, endorses HSC examination specifications, and matters relating to educational measurement for the Higher School Certificate.

During April 2022 the *Software Engineering 11–12 Draft Syllabus* and *Assessment and Examination Requirements* was presented to the CaCC for endorsement and this engagement report was presented for noting.

Draft syllabus feedback and NESA responses

Summary of feedback received

The following is an overview of the feedback received during consultation.

Strengths

Aspects of the syllabus emerged as strengths, including contemporary content, the inclusion of a Software Engineering project, and how the syllabus promotes a practical approach to learning. There was support for a computer-based HSC examination.

The draft school-based assessment requirements, HSC examination specifications and Performance Band Descriptions were supported.

Key matters

Respondents identified that the aim, rationale and outcomes required refinement. Views were expressed that the amount and order of content, and the focus of particular topics could compromise effective delivery. Many respondents questioned the ordering of content using the Design and Production headings.

Themes that emerged from consultation included: the need for teacher development and support; reducing the amount of content; ensuring the technical accuracy of the content; and the difficulty some teachers may have in delivering the project-based approach outlined in the syllabus.

Concerns were raised that the assessment status and focus area requirements for the Software Engineering Project needed clarification. Stakeholders suggested minor edits to content and terminology.

Strengths of the draft syllabus

Feedback	Sources
Content is contemporary The syllabus reflects contemporary applications of computing and industrial practices.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG 2021: TENs
Project-based delivery There was support for the structure of the content as it provides schools with the flexibility to deliver the course content using practical experiences.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG 2021: TENs
Programming Fundamentals There was support for the Year 11 topic Programming Fundamentals.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG 2021: TENs
Software Engineering project There was support for a Year 12 Software Engineering Project.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG 2021: TENs

Strengths of the draft assessment

Feedback	Sources
Computer-based examination There was support for a computer-based HSC examination.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG 2021: TENs

Key matters

Key matters	Sources	NESA's response to the key matters
Rationale and aim The rationale and aim did not appropriately reflect the topics and content.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG 2021: TENs 2021: SeRG	The rationale and aim have been reviewed and refined to ensure they align with the course content and satisfy reform requirements of syllabus presentation.

Key matters	Sources	NESA's response to the key matters
Objectives and outcomes The objectives and outcomes did not appropriately reflect course content.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG	The outcomes have been reviewed and, where appropriate, refined to ensure they align with the course content. The new syllabus structure incorporates elements of objectives within the aim, and in this syllabus objectives have been integrated into outcomes as relevant. Following feedback from the TAG, additional targeted consultation has been undertaken in regard to refinements made to the outcomes.
Topic structure The topic structure may need to be revised to delete or move topics between Year 11 and Year 12.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions.	Some topics have been moved between Year 11 and Year 12 which removed duplication of content. The number of topics has been reduced from 4 to 3 in Year 11.

Key matters	Sources	NESA's response to the key matters
Topic names The topic names may need to be improved to clarify the intentions of the course.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG	The topic names have been revised, and the content has been refined to emphasise focus on project work in the syllabus. Further refinement has occurred following TAG advice to align topic names more closely with content.
Amount and duplication of content Respondents expressed concerns about the amount and duplication of content in each topic, indicating it could discourage teachers from implementing project work.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG	The content has been updated to remove duplication and reduce its volume to focus on essential learning in each topic, providing more time for teachers to engage students in project work.
Syllabus flow The content and examples in the topics need to be reviewed to improve the learning progression between Year 11 content and Year 12 content.	Previous rounds of consultation. including face-to-face, targeted, online surveys and written submissions. 2021: TAG	The content and examples in the topics have been reviewed, reordered and refined to improve the learning progression, development and application of skills between the Year 11 content and Year 12 content.

Key matters	Sources	NESA's response to the key matters
Design and Production content focus (sub-headings) structure The content contained within each content focus (represented as a sub-heading) may need to be moved or improved for clarity.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG	Content has been reordered, reduced, consolidated and grouped under more appropriate content focus areas.
Rigour The increased rigour of the course may be an issue for some students.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG	The amount of content has been reduced; however, the rigour of the course has been retained as it addresses the curriculum reforms.

Key matters	Sources	NESA's response to the key matters
Dating of content The technologies referred to in the content may become outdated.	Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions. 2021: TAG 2021: TENs	The content and examples have been reviewed and amended, or removed where necessary to ensure they remain contemporary. Content indicates the essential learning, allowing teachers to draw on contemporary examples to support learning.

Previous rounds of consultation, including face-to-face, targeted, online surveys and written submissions (see Appendices 7–10)

Appendices – Consultation participation

Appendix 1: Computing Technology 11–12 Technical Advisory Group Engagement

The Technical Advisory Group (TAG) acquired ongoing feedback over a 5-month period from experienced teacher practitioners and other experts in the computing technologies area.

TAG members

Expert	Organisation
Dr Matt Bower	Macquarie University
Ms Lisa Beacher	NSW Department of Education
Mr Tim Milkins	Barker College

Appendix 2: Demographic data for Software Design and Development 11–12 Syllabus review survey (2018)

Feedback was received over a 3-week period from 29 January 2018 to 19 March 2018 from a wide range of education contexts and other experts in the subject of Software Design and Development 11–12.

Each of the **3 education sectors** were represented

NESA received

97 responses
to the Software Design and Development 11–12 Syllabus Review Survey 2018
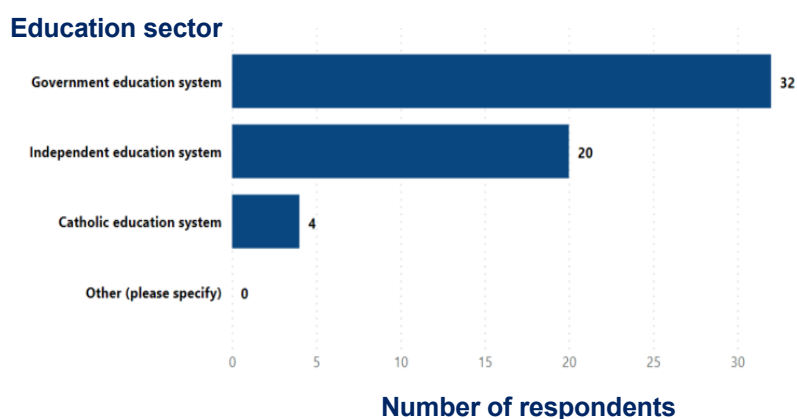
Education sector

Figure 1: Education sector of respondents to the Software Design and Development 11–12 Syllabus Review Survey results 2018.

Respondents came from a range of education contexts, with a majority of **92% being Software Design and Development Teachers**
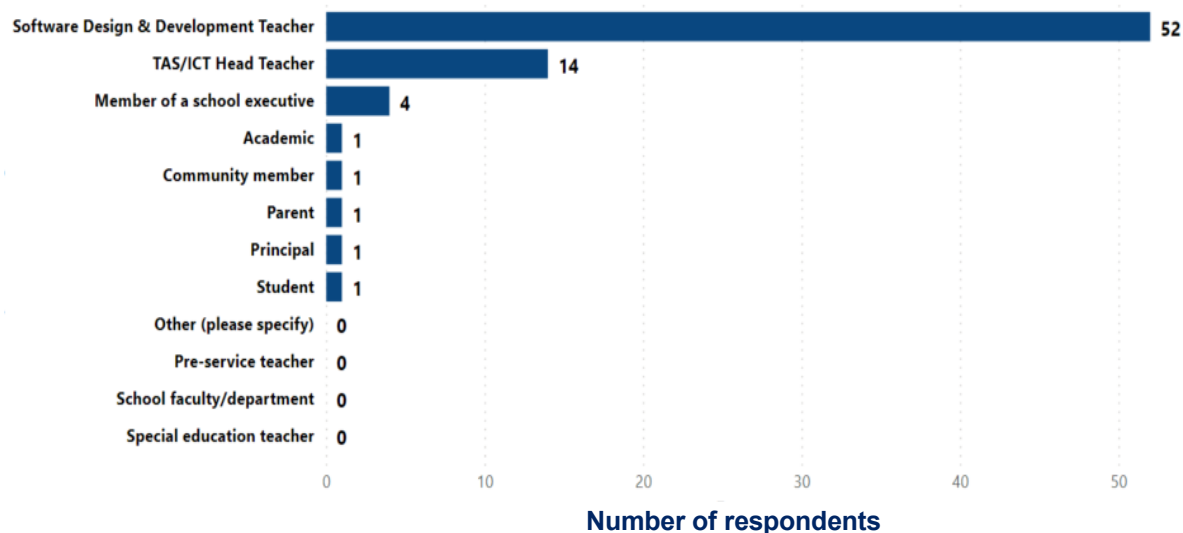
Respondents' background

Figure 2: Background of respondents to the Software Design and Development 11–12 Syllabus review survey results 2018.

Note: 'Other (please specify)' refers to 'previously a teacher of IPT' and' HSC marker, judge marker, senior judge marker and examiner'.

Respondents came from a range of education contexts, **with a majority teaching in a secondary school**
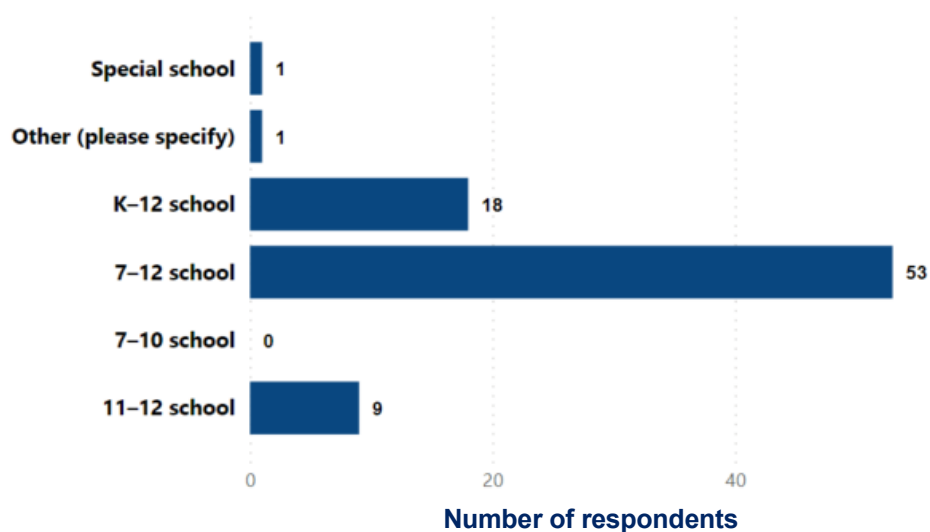
Respondents' school grade background

Figure 3: Teaching background of respondents to the Software Design and Development 11–12 Syllabus Review Survey 2018.

Stakeholders across **New South Wales** participated, with 62% of respondents coming from the Metropolitan areas.
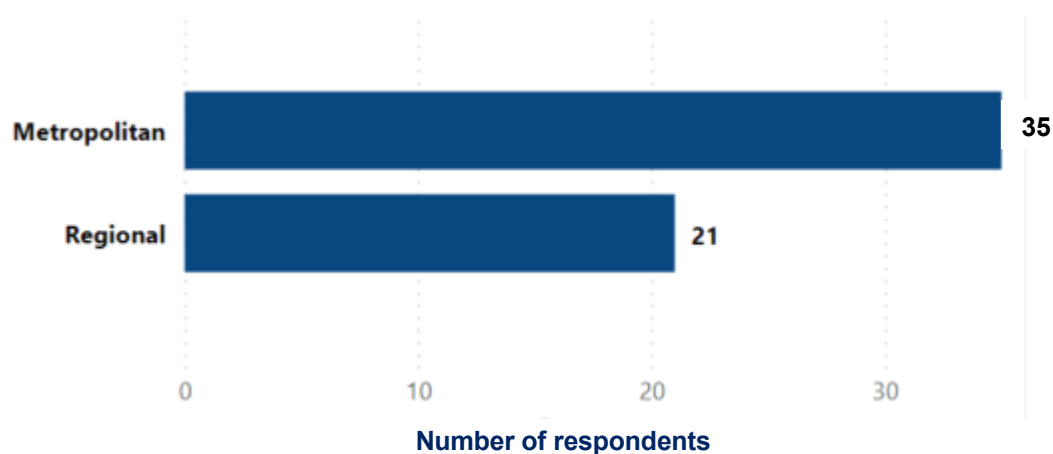
Respondents' location

Figure 4: Location of respondents to the Software Design and Development 11–12 Syllabus review survey results 2018.

Appendix 3: Online survey quantitative data for Software Design and Development 11–12 Syllabus review (2018)

Figures 5–8 provide an overview of survey quantitative data gathered on the Syllabus Review in 2018.
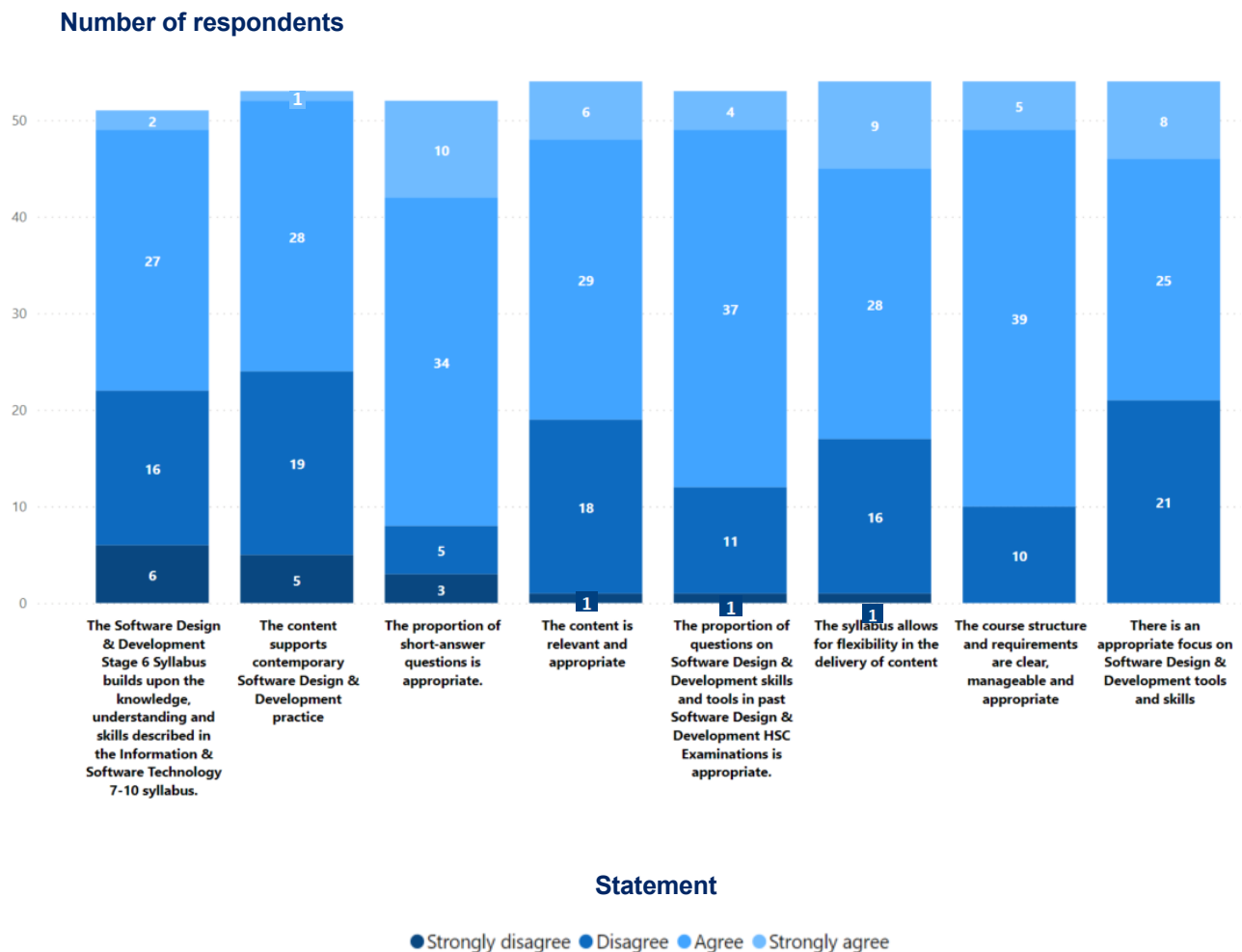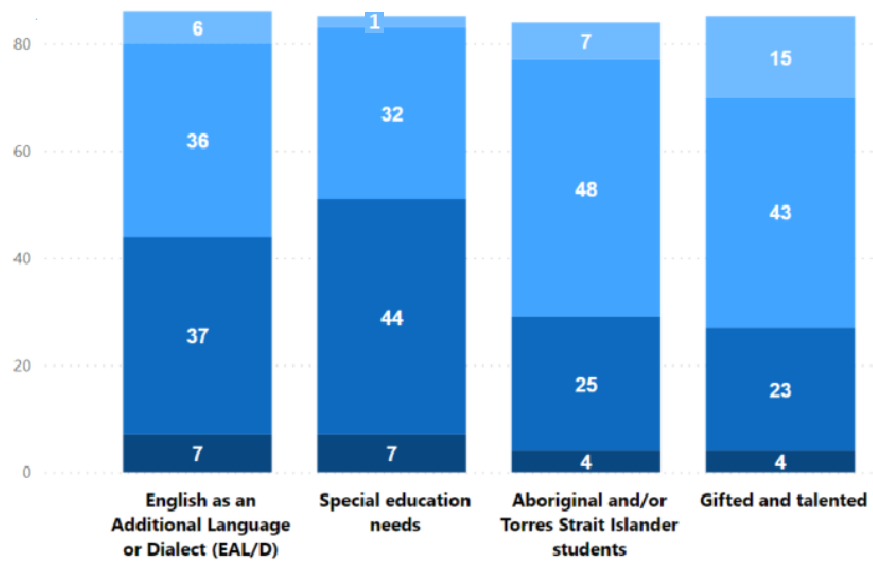
Number of respondents

Figure 5: Number of responses to the question 'To what extent do you agree with the following statements?'.
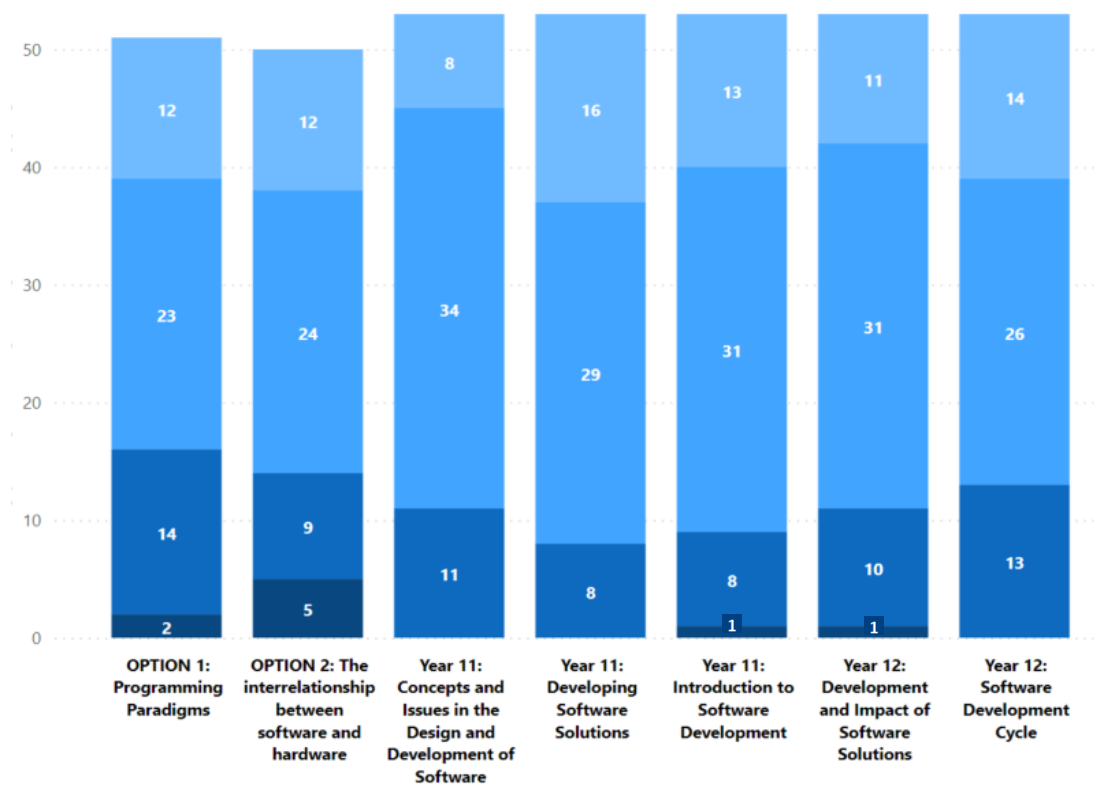
Number of respondents

**Dishell

Diversity of learners**

● Strongly disagree ● Disagree ● Agree ● Strongly agree

Figure 6: Number of responses to the question 'To what extent do you agree that the syllabus is inclusive of the diversity of learners?''

Number of respondents

Figure 7: Number of responses to the question 'To what extent are the current syllabus topics and content relevant and appropriate?'.
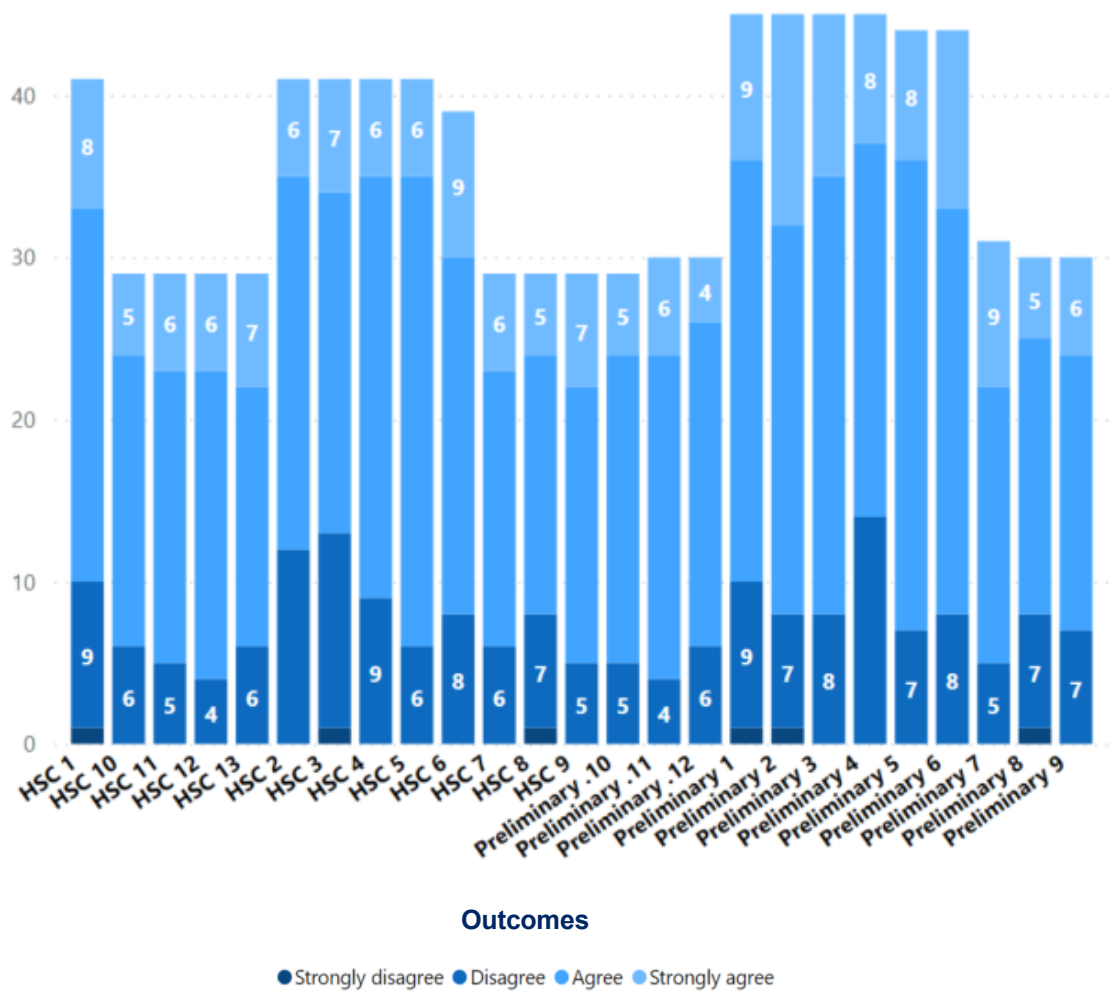
Number of respondents

Figure 8: Number of responses to the question 'To what extent do you agree with the statement that the current Preliminary (Year 11) and current HSC (Year 12) course outcomes support contemporary Software Design & Development practice?'.

Appendix 4: Demographic data for the Computing Technology consultation survey (2021)

This was a targeted online survey used with 4 TENs teachers, with feedback received over a 3-week period from 3 November 2021 to 21 November 2021 on the *Software Engineering 11–12 Draft Syllabus.*
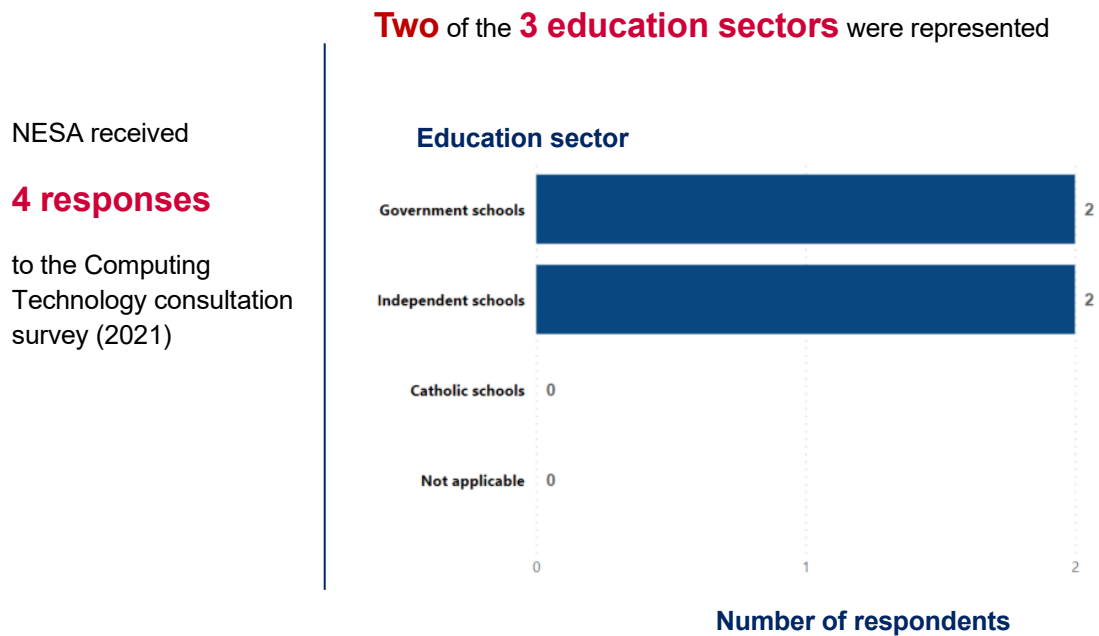
Two of the **3 education sectors** were represented

NESA received

4 responses

to the Computing Technology consultation survey (2021)

Education sector

Education sector	Number of respondents
Government schools	2
Independent schools	2
Catholic schools	0
Not applicable	0

Number of respondents

Figure 9: Educational sector of respondents to the Computing Technology consultation survey (2021).

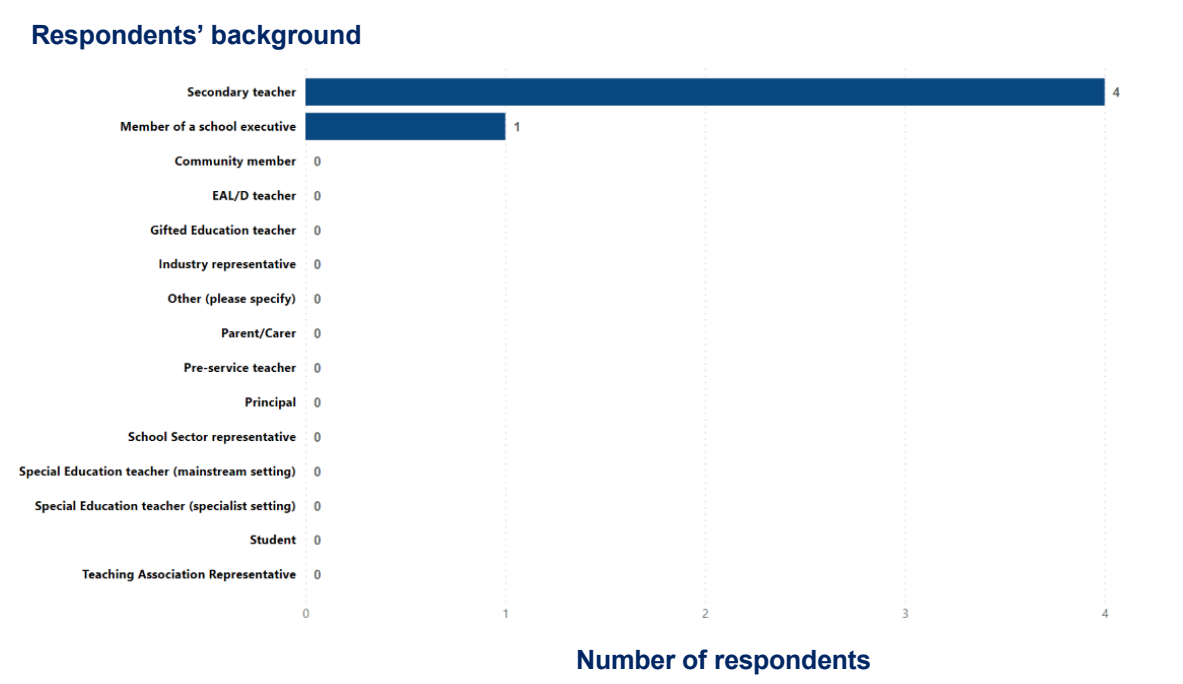Respondents came from a small range of education contexts, with a majority **being secondary school teachers**

Respondents' background

Figure 10: Background of respondents to the Computing Technology consultation survey (2021)
(Note: responders could select more than one option).

Of participants who are teachers, **teaching experience varied**

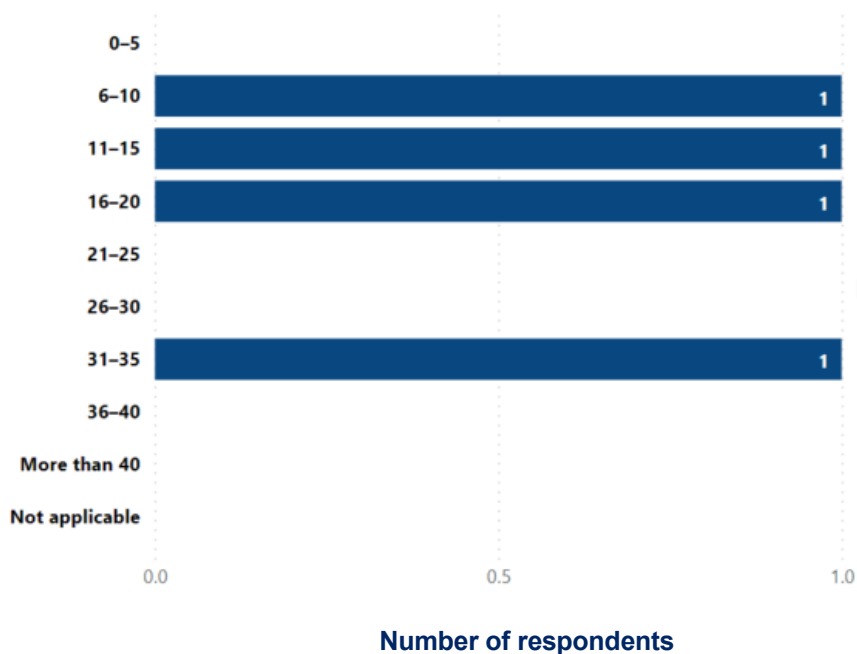**Teaching experience (years)**

Number of respondents

Figure 11: Number of years as a practising teacher for respondents to the Computing Technology consultation survey (2021).

Stakeholders across **New South Wales** participated, with 50% of respondents coming from Greater Sydney
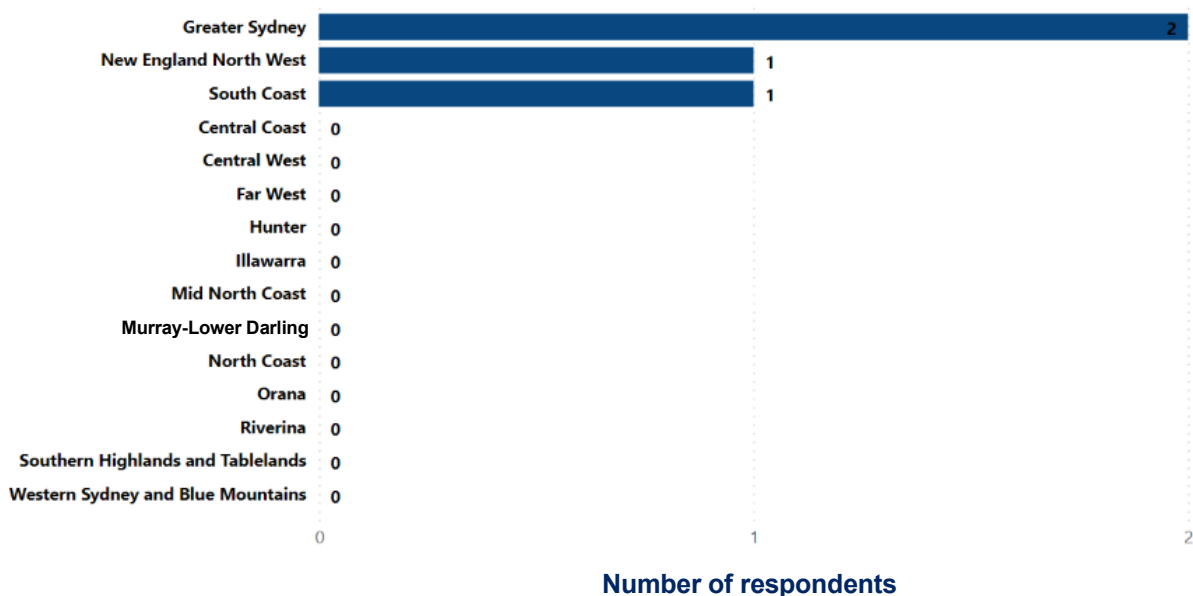
Area of NSW

Number of respondents

Figure 12: Location of respondents to the Computing Technology consultation survey (2021).

Figure 13: Rationale, aim and objectives: number of responses to the question 'School-based assessment and HSC Examination - To what extent do you agree with the following statements?'.

Number of respondents
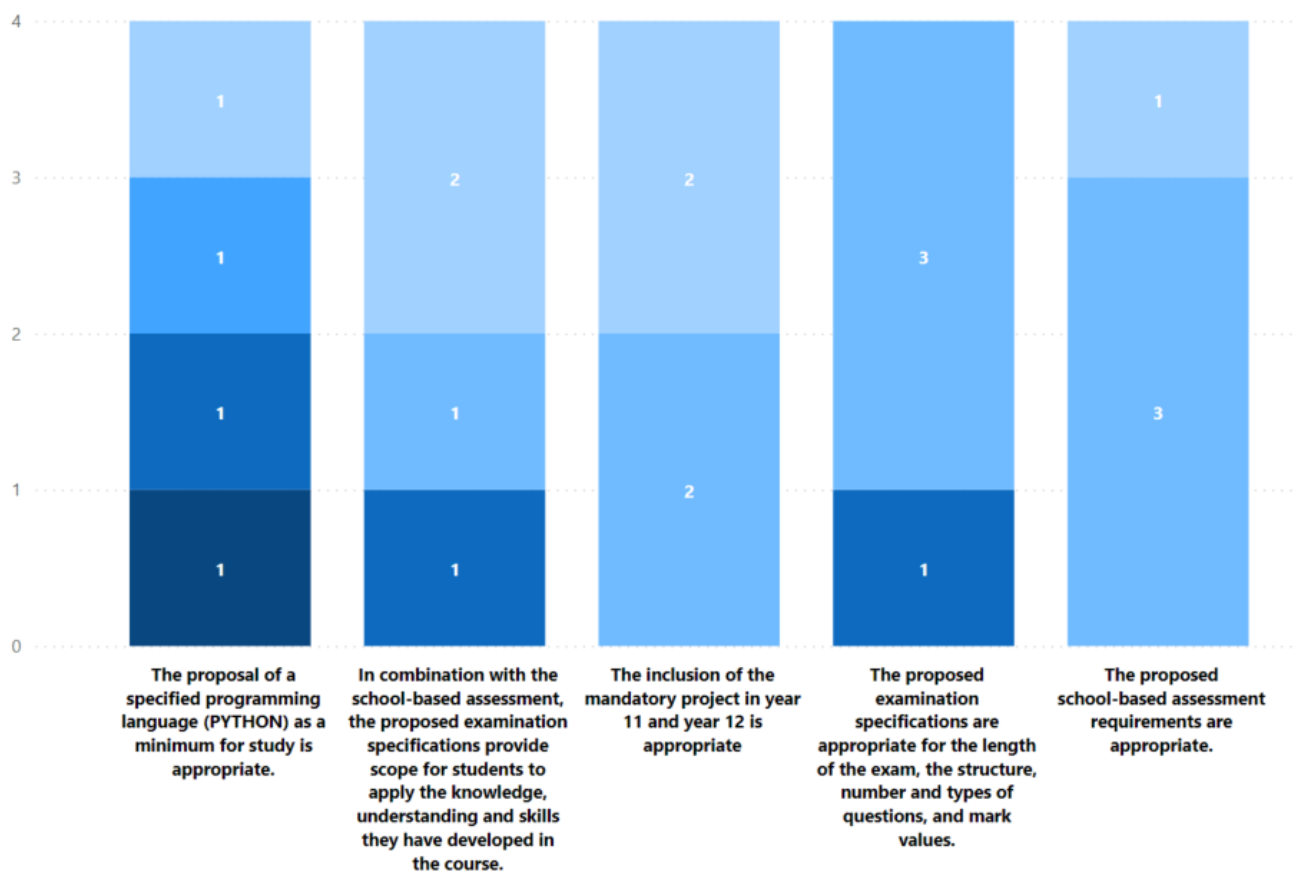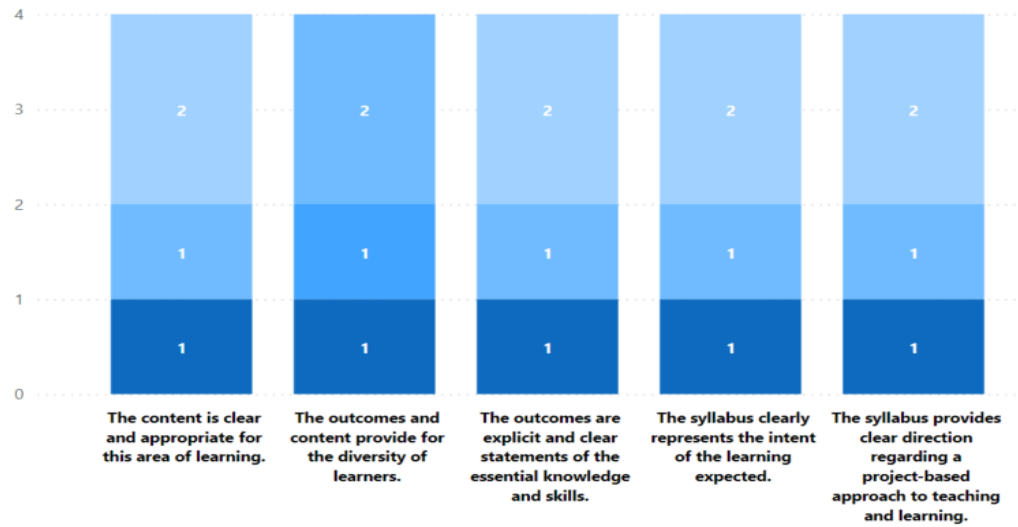
Statement

Strongly disagree ● Disagree ● Neither agree nor disagree ● Agree ● Strongly agree ● Not in a position to comment

Figure 14: The outcomes: number of responses to the question 'Having considered the Software Engineering Draft Syllabus - To what extent do you agree with the following statements?'.
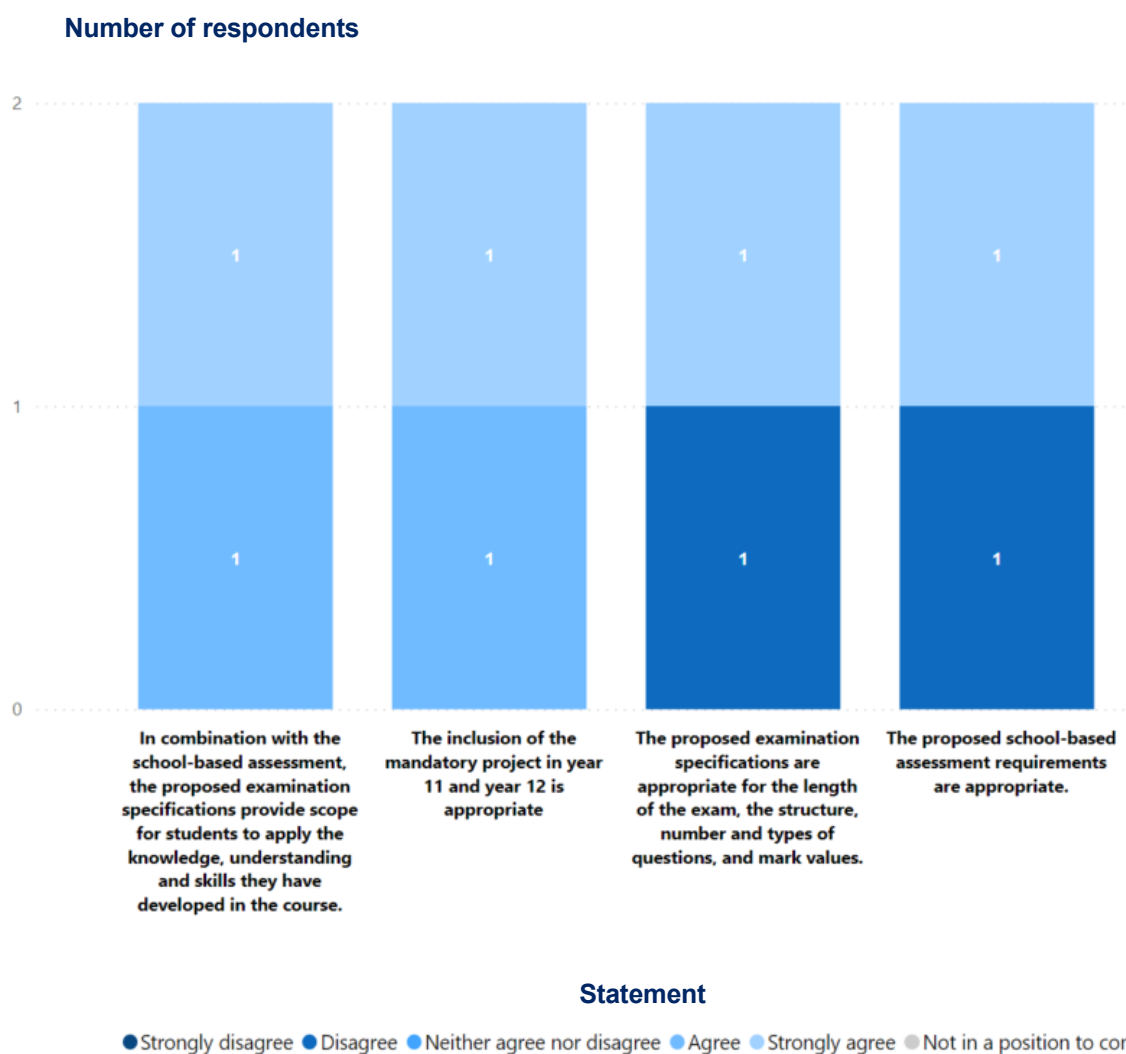
Number of respondents

Figure 15: The number of responses to the question 'Having considered the school-based assessment and HSC examination - To what extent do you agree with the following statements?'.

Appendix 6: Face-to-face public consultation meeting participation

Public consultation meetings

69 attendees

Location	Date (2019)	Number of attendees
North Sydney	1 August	16
West Pennant Hills	6 August	22
Brunswick Heads	8 August	5
Albury	13 August	4
Liverpool	15 August	13
Lake Macquarie	22 August	9

Attendees	Number of attendees
Primary teacher	0
Secondary teacher	65
School executive	1
Principal	0
Academic	0
Pre-service teacher	0
Special education teacher (mainstream setting)	0
Special education teacher (specialist class in a mainstream setting)	0
Special education teacher (specialist setting)	0
Student	0
Parent/carer	0
Community member	0
Other	3

Attendees identified as	Number of attendees
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	68

Sector	Number of attendees
Government	36
Catholic	15
Independent	16
Not applicable	2

Area of NSW	Number of attendees
Metropolitan	49
Regional	20

Type of school	Number of attendees
K–6	0
K–12	20
7–10	0
7–12	34
11–12	9
Other	4
Not applicable	2

Appendix 7: Written submissions

16 submissions.

Organisations, groups and individuals	Code
Association of Independent Schools NSW	AISNSW
Department of Education	DoE
Department of Education Disability Learning Support	DoE_DLS
ICT Educators NSW	ICTENSW
The Institute of Technology Educators	iTE
Individual respondent	Submission 1
Individual respondent	Submission 2
Individual respondent	Submission 3
Individual respondent	Submission 4
Individual respondent	Submission 5
Individual respondent	Submission 6
Individual respondent	Submission 7
Individual respondent	Submission 8
Individual respondent	Submission 9
Individual respondent	Submission 10
Individual respondent	Submission 11

Appendix 8: Targeted consultation

Aboriginal Education

The Aboriginal Education targeted consultation meetings acquired feedback from stakeholders on the representations of Aboriginal and Torres Strait Islander histories and cultures in the *Software Engineering 11–12 Draft Syllabus*.

Location	Date (2019)	Number of attendees
South Sydney	20 September	3

Academic

The Academic targeted meetings acquired feedback from stakeholders in relation to *Software Engineering 11–12 Draft Syllabus* in 2020.

Location	Date (2020)	Number of attendees
Online	11 June	1
Online	13 July	1

Education sectors and teacher associations

Education sector and key teacher association representatives met to provide feedback on the accuracy and suitability of the *Software Engineering 11–12* in 2019.

Location	Date (2019)	Number of attendees
Sydney	6 December	7

Industry

Location	Date (2019–2020)	Number of attendees
Online and via email	February 2019 – July 2020	5

Student voice

Targeted consultation meetings with students were held to gather feedback about learning Software Design and Development in 2019. These meetings focused on:

▪ Areas of current syllabus that the students like and think should remain

- Areas of current syllabus that the students believe should be replaced

- The opportunities presented by a computer-based examination

There were in total 19 attendees, with 58% of students identifying as Aboriginal and/or Torres Strait Islander.

Note: Non-targeted student meetings may include participants who identified as Aboriginal and/or Torres Strait Islander students and this is indicated in the percentage of Aboriginal and/or Torres Strait Islander students shown above.

Location	Date (2019)	Number of attendees
Epping	16 May	3
Tweed Heads	13 August	3
Liverpool (Aboriginal Education)	15 August	5
Sydney (Aboriginal Education)	3 September	8

Teacher Expert Networks

The Teacher Expert Networks (TENs) and associates targeted focus group acquired feedback from stakeholders in relation to the *Software Engineering 11–12 Draft Syllabus* in 2021.

Title	Location	Date (2021)	Number of attendees
11–12 Computing Technology Teacher Expert Network Meeting	Online	10 November	15

Appendix 9: Technologies 11–12 Board Curriculum Committee consultation meeting (code: BCC)

This meeting was held on 21 August 2019 and involved 13 members (including the Chair).

Name	Organisation
Mr Gary Johnson	Chair
Mr Warren Bridges	NSW Aboriginal Education Consultative Group Inc
Mr Peter Davis	NSW Department of Education
Ms Sharon Hooper	TAFE NSW
Assoc. Professor Sarah Howard	NSW/Territories Committee of Chairs of Academic Boards/Senates
Ms Melissa Johnston	NSW Secondary Principals' Council
Mrs Lynn McKinnon	Council of Catholic School Parents NSW
Mr Tim Milkins	Association of Independent Schools of NSW
Mr John Morris	NSW Teachers Federation
Mr Justin O'Neill	Independent Education Union NSW/ACT
Mrs Teresa Rucinski	NSW Parents' Council
Mr Dan Rytmeister	NSW Department of Education
Ms Kelly Wafer	Australian Association of Special Education NSW Chapter