

# GCSE COMPUTER SCIENCE



**Summary of decisions and analysis of responses  
to our consultation on reforming GCSE Computer  
Science for first teaching in September 2017**

# Summary of decisions and analysis of responses to our consultation on reforming GCSE Computer Science for first teaching in 2017

## **Executive Summary**

Between 4 April and 15 May 2016, Qualifications Wales consulted on proposals for a reformed GCSE Computer Science qualification to be Approved for first teaching in Wales from September 2017. A copy of the consultation proposals and questions is available at [this link](#).

In July 2016 we published *Approval Criteria for GCSE Computer Science (2016)*<sup>1</sup>, which set out the detailed requirements for how the reformed qualification should be designed and assessed. The requirements are informed by the responses to our online consultation and by views expressed by learners through a supplementary engagement exercise.

This report summarises the responses we received to the consultation of the proposals and explains the decisions that we took in light of these, which are reflected in the *Approval Criteria for GCSE Computer Science (2016)*<sup>1</sup>.

This report is available in English and in Welsh. Respondents' comments have been translated, where appropriate, in accordance with the language of the report.

Percentages used throughout this document have been rounded to the nearest whole number.

## **Background**

GCSE Computer Science is being reformed in Wales for first teaching from September 2017, as part of a wider programme of reforms to GCSEs, AS and A Levels. The only awarding body who will develop and offer the reformed GCSE Computer Science in Wales will be WJEC, as it is the only awarding body who has agreed to develop reformed GCSEs designed specifically for award in Wales.

The proposals on which we consulted were developed through engagement with a number of stakeholders including the awarding body WJEC, schools and further education institutions (FEIs), higher education institutions (HEIs) and the Welsh Government (WG).

## **Summary of proposals and decisions**

### *Aims and objectives*

We proposed a set of aims and objectives for the reformed qualification, which are reflected in the *Approval Criteria for GCSE Computer Science (2016)*<sup>1</sup>.

---

<sup>1</sup> [Approval Criteria for GCSE Computer Science](#)

## *Content*

We have broadly retained the proposed subject content in the Approval Criteria, with some minor amendments to the skills specified.

## *Assessment objectives*

We have broadly adopted the assessment objectives and weightings, with minor amendments made to AO3.

## *Assessment*

As we proposed, the qualification will be non tiered.

## **Consultation responses**

In total, six respondents completed all, or part of, the online consultation for GCSE Computer Science. Of these, four respondents identified themselves as responding as an individual, no responses were received on behalf of an organisation and two respondents did not complete the personal details section of the consultation. Four respondents identified themselves as teachers and two did not complete this section of the consultation.

## **Subject aims and objectives**

For the reformed GCSE Computer Science qualification, Qualifications Wales proposed the following subject aims and objectives:

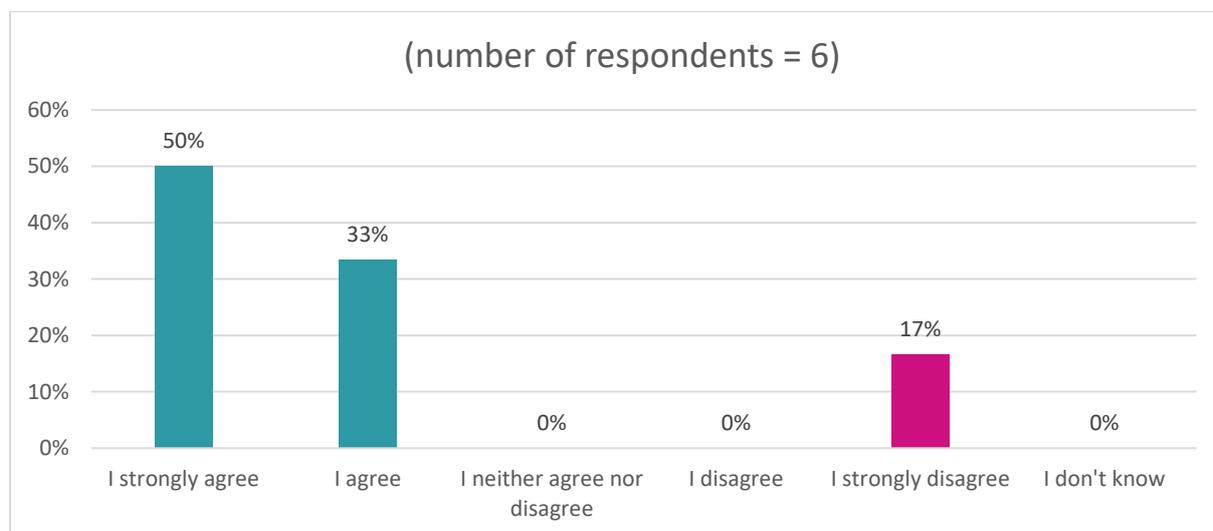
- *Specifications must enable learners to:*
  - *understand and apply the fundamental principles and concepts of computer science, including abstraction, decomposition, logic, algorithms, and data representation;*
  - *analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs;*
  - *think creatively, innovatively, analytically, logically and critically;*
  - *understand the components that make up digital systems, and how they communicate with one another and with other systems;*
  - *understand the impacts of digital technology to the individual and to wider society;*
  - *apply mathematical skills relevant to computer science.*

In our consultation, we asked:

**Question 1: To what extent do you agree/disagree with the proposed subject aims and objectives for GCSE Computer Science in Wales?**

As illustrated in Chart 1 below, 83% of respondents agreed or strongly agreed with the proposed subject aims and objectives and 17% of respondents strongly disagreed.

Chart 1. showing responses to question 1 of the GCSE Computer Science consultation.



- One respondent who agreed with the proposed subject aims and objectives also agreed with aligning subject content with England “as it is relevant, contemporary and rigorous”.
- Of those who responded to question 1, one respondent strongly disagreed with the proposal, commenting that there could be “accessibility issues for less able pupils”.

The proposed subject aims and objectives are reflected in the *Approval Criteria for GCSE Computer Science (2016)*<sup>1</sup>.

### **Subject Content**

Qualifications Wales proposed that the subject content and skills for GCSE Computer Science in England should be adopted for the GCSE Computer Science in Wales. The proposal requires learners to understand and have knowledge of topics such as algorithms, networks, programme language, cyber security and ethical, legal and environmental impacts of digital technology. Learners also would be required to obtain the following skills:

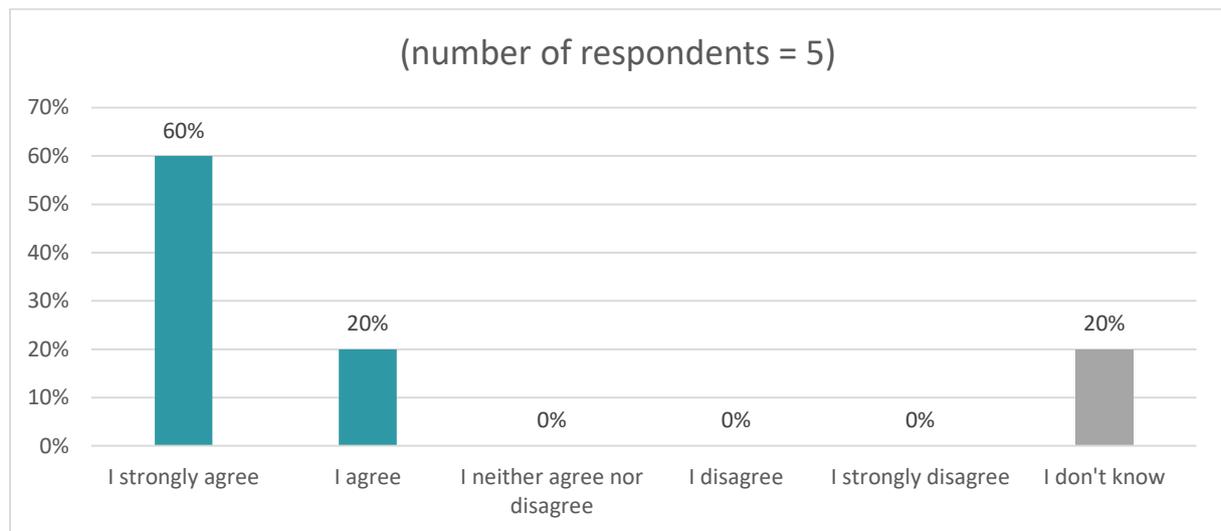
- *take a systematic approach to problem solving;*
- *design, write, test and refine programs;*
- *use appropriate security techniques;*
- *evaluate the fitness for purpose of algorithms;*
- *use abstraction effectively;*
- *model selected aspects of the external world in a program;*
- *appropriately structure programs;*
- *apply computing-related mathematics.*

In our consultation, we asked:

**Question 2: To what extent do you agree/disagree with the proposed subject content for GCSE Computer Science in Wales?**

As illustrated in Chart 2 below, 80% of the respondents agreed or strongly agreed with the proposal. 20% of respondents did not know whether they agreed with the proposal.

Chart 2. showing responses to question 2 of the GCSE Computer Science consultation.



Following the consultation minor amendments have been made to the skills specified:

- in 4.2 'design, write, test and refine programs' has been replaced with 'design, write, test and refine programs with a textual program definition';
- 'use abstraction effectively' has merged with 'model selected aspects of the external world in a program; to structure programs appropriately'.

## **Assessment objectives**

For the reformed GCSE Computer Science qualification, the following assessment objectives and weightings were proposed:

*Table 1. showing the proposed assessment objectives and weightings for the reformed GCSE Computer Science.*

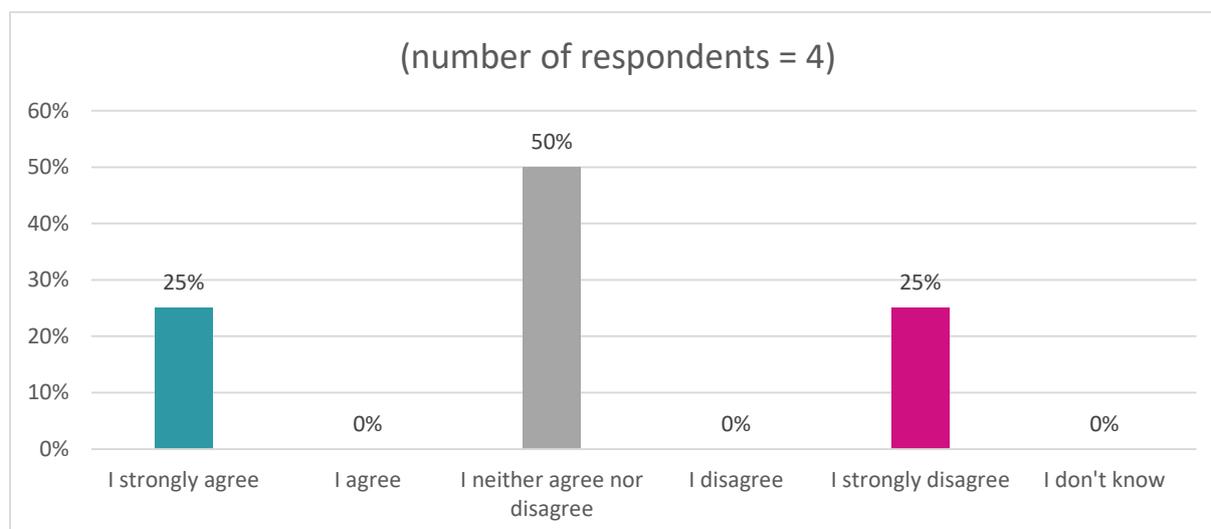
<b>Objective</b>	<b>Requirements</b>	<b>Weighting</b>
AO1	Demonstrate knowledge and understanding of the key concepts and principles of computer science.	30%
AO2	Apply knowledge and understanding of key concepts and principles of computer science.	40%
AO3	Analyse problems in computational terms to design, program, evaluate and refine solutions.	30%

In our consultation, we asked:

***Question 3: To what extent do you agree/disagree that the proposed assessment objectives and weightings should apply to the reformed GCSE Computer Science in Wales?***

As Chart 3 below shows, 25% of respondents strongly agreed with the proposal, 25% strongly disagreed and 50% neither agreed nor disagreed.

*Chart 3. showing responses to question 3 of the GCSE Computer Science consultation.*



- One respondent who agreed with the proposal commented that the assessment objectives are “to be commended”.
- One respondent who strongly disagreed with the proposal stated that “the weighting of 30% for AO3 seems to underestimate the importance of core programming skills.”

The proposed assessment objectives and weightings are reflected in the published *Approval Criteria GCSE Computer Science (2016)*<sup>1</sup>, with the following amendment:

- In AO3 ‘analyse problems in computational terms to design, program, evaluate and refine solutions’ has been replaced with ‘analyse problems in computational terms to make reasoned judgements and to design, program, evaluate and refine solutions’.

As highlighted within our consultation, other than minor changes made to A03, the proposed assessment objectives and weightings ensure comparability with the assessment objectives and weightings specified by Ofqual for the reformed GCSE Computer Science in England.

### **Non-examination Assessment (NEA)**

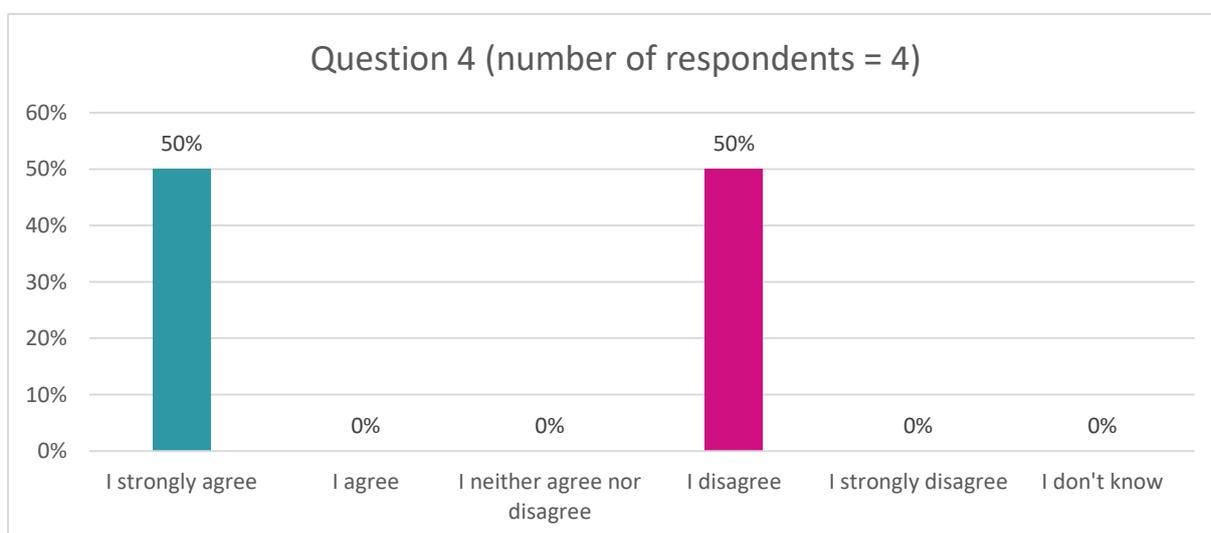
Qualifications Wales proposed that the reformed GCSE Computer Science qualification should have a weighting of 80% written examination and 20% NEA.

In relation to the assessment structure, we asked:

***Question 4: To what extent do you agree/disagree with the proposal to adopt the same NEA weighting as England, for GCSE Computer Science in Wales?***

As shown in Chart 4 below, 50% of respondents strongly agreed with the proposal and 50% disagreed with the proposal.

*Chart 4. showing responses to question 4 of the GCSE Computer Science consultation.*



- One respondent who strongly agreed with the proposal stated that “the currency of the qualification is vital”.
- A respondent who disagreed with the proposal commented that the proposed NEA weighting “disadvantages those who perform worse in examinations, but may have good practical skills”.

The published *Approval Criteria for GCSE Computer Science (2016)*<sup>1</sup> reflects the proposal.

As highlighted within our consultation, the proposed NEA weighting will ensure comparability with GCSE Computer Science in England.

### **Tiering**

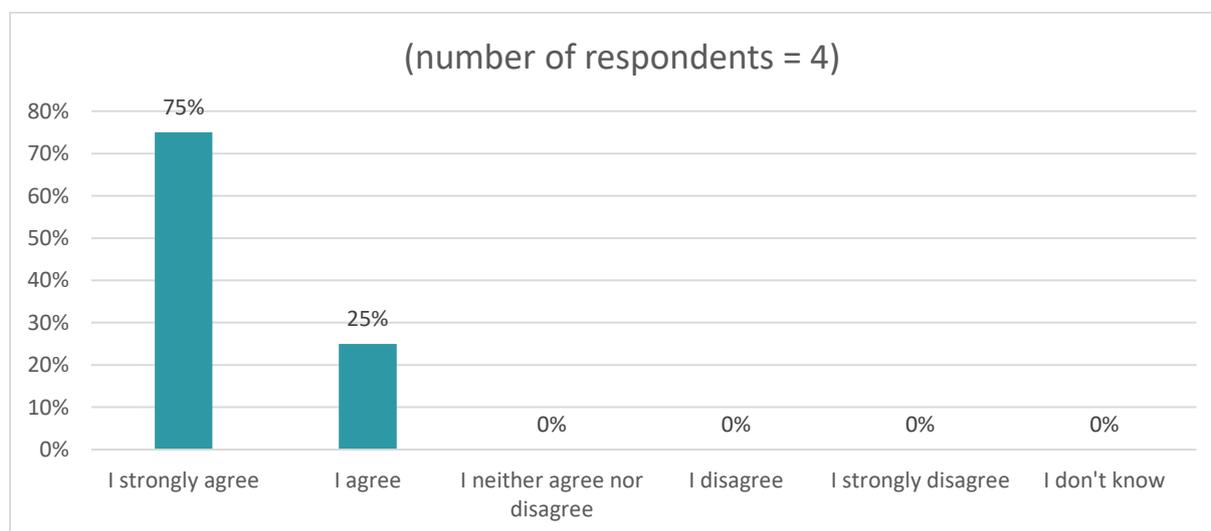
For the reformed GCSE Computer Science qualification Qualifications Wales proposed that it will not be tiered.

In our consultation, we asked:

**Question 5: To what extent do you agree/disagree with the proposal that GCSE Computer Science will not be tiered?**

As illustrated in Chart 5 below, 75% of respondents strongly agreed with the proposal and 25% agreed.

*Chart 5. Showing responses to question 5 of the GCSE Computer Science consultation.*



The published *Approval Criteria for GCSE Computer Science (2016)*<sup>1</sup> reflects the proposal.

## **Support and Resources**

In all our consultations, we asked respondents the following question:

***What support and resources do you feel centres and teachers may require to achieve maximum readiness to deliver the revised specification? Please provide comments.***

Those who responded to this question highlighted, amongst others:

- the need to provide textbooks and online resources;
- the potential benefits of centrally organised INSET training;
- the need for exemplar exam papers and CPD events;
- the need for exemplar exam papers and sample assessment materials;
- and the usefulness of model answers to indicate the expected level of response.

We will share the points raised with the awarding body, consortia and Welsh Government.

## **Impact on individuals with protected characteristics**

In all our consultations, we asked respondents the following question:

***Please highlight below if you feel any of this proposal has the potential to have a positive or negative impact on individuals with protected characteristics and whether any of the proposal would cause accessibility issues for learners in Wales.***

For the reformed GCSE Computer Science consultation, no respondents highlighted any positive or negative impacts on individuals with protected characteristics.

### **Further information**

Enquiries about this document should be directed to:

Enquiries  
Qualifications Wales  
Q2 Building  
Pencarn Lane  
Imperial Park  
Coedkernew  
Newport  
NP10 8AR  
[Enquiries@qualificationswales.org](mailto:Enquiries@qualificationswales.org)