Department for Education

GCSE Computer Science

Proposed Subject Content

Government consultation

Launch date 20 May 2024
Respond by 21 July 2024

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Introduction

1. This consultation seeks views on proposed updates to the current computer science GCSE subject content. The current computer science GCSE subject content was published by the Department for Education in January 2015, and since that time digital technology has moved on, meaning that some content is outdated. GCSE subject content sets out the knowledge, understanding and skills common to all GCSE specifications in a given subject. Together with the assessment objectives it provides the framework within which the awarding organisations create the detail of their specifications.

2. GCSE computer science is designed to equip pupils with the knowledge they will need for the technological jobs of the future and supports progression into further education or employment. Students are taught how to understand and apply the fundamental principles and concepts of computer science, how to analyse problems in computational terms, and to write programs. Other areas of study include the components that make up digital systems, aspects of cyber security, the impacts of digital technology to the individual and to wider society, and how to apply mathematical skills relevant to computer science.

3. In reviewing the subject content, the Department asked BCS, The Chartered Institute for IT, to convene a review group of subject experts who could provide views on what changes could be made to the subject content to ensure that it would remain relevant to digital technology, both now and in the foreseeable future, given the rapid pace of change. The proposed draft has been informed by their views, and also by the outcomes of discussions held with the awarding organisations currently offering the subject (OCR, AQA, Pearson and WJEC).

4. Key changes to the subject content include the opportunity for visual programming languages to be used in meeting the programming requirements, a clarification which confirms that artificial intelligence (AI) must be considered within the teaching of the impacts of digital technologies, greater transparency of the underlying programming knowledge and skills students need to learn, and a general re-structure of the content that is designed to aid its coherence and flow. In addition, a new introductory paragraph is proposed to contextualise the study of computer science, and to better represent the subject as an academic discipline.

5. It is currently projected that a revised draft of the subject content will be published early in 2025, with first teaching from the academic year 2026/27.

Who this is for

6. We are interested to hear from those individuals and organisations with an interest in the content of the computer science GCSE, including:

   - secondary teachers of computer science and subject leaders
   - organisations which represent the views of computing teachers
   - students
   - awarding organisations

- companies and other organisations working in the digital industries.

Issue date

7. The consultation was issued on 20 May 2024.

Enquiries

8. If your enquiry is related to the policy content of the consultation you can contact the DfE Computing Policy Team by email: GCSEComputerScience.CONSULTATION@education.gov.uk.

9. If your enquiry is related to the Department's e-consultation website or the consultation process in general, you can contact the Department's Ministerial and Public Communications Division by email: Consultations.Coordinator@education.gov.uk or by telephone: 0370 000 2288 or via the DfE Contact us page.

Additional copies

Additional copies are available electronically and can be downloaded from GOV.UK DfE consultations.

The response

The results of the consultation and the Department's response will be published on GOV.UK in due course.

About this consultation

10. The proposed updated subject content responds to recent advances in technology, to ensure that students will continue to be taught the computer science knowledge, understanding and skills that will be most relevant to further study or employment in computing and a broad range of other disciplines. It removes, or updates, content which is of increasingly limited usefulness, and also introduces new text in some areas, to improve and clarify the underpinning knowledge required.

11. A key change is the proposal that the subject content allows for visual programming languages to be used in meeting the programming requirements, rather than this being limited to textual programming languages only. Visual languages now offer equivalent functionality to textual languages, and the underpinning knowledge, understanding and skills of programming is the same for both language types. The inclusion of visual languages supports longevity in the content, as all programming languages continue to evolve. It will be for awarding organisations to decide if they wish to offer the GCSE in a textual or visual language, or both.

12. The opportunity for use of visual languages at GCSE will make it different to the A level, where the use of textual languages is currently the only option. The Department's view is that students completing the computer science GCSE will have the underpinning programming knowledge, understanding and skills that will enable them to move sufficiently easily onto A level, or equivalent study, based on textual languages. However, we are interested to hear your views on this point.

13. In essence, the proposed subject content intends to make it clearer what should be taught, avoiding the inclusion of specific examples which are liable to change over time, or unnecessary references to aspects of digital technology which may simply distract from the teaching of the underpinning knowledge, understanding and skills. By updating the subject content, we are ensuring that the GCSE is maintained to a high standard and will continue to support students in progressing to further study, training, or employment in computing and other specialisms.

Respond online

14. To help us analyse the responses please use the online system wherever possible. Visit DfE consultations on GOV.UK to submit your response.

Other ways to respond

15. If for exceptional reasons, you are unable to use the online system, for example because you use specialist accessibility software that is not compatible with the system, you may request and complete a word document version of the form.

By email

GCSEComputerScience.CONSULTATION@education.gov.uk

By post

FAO Fiona Bowditch
Computing Policy Team
Department for Education
Sanctuary Buildings
20 Great Smith Street
London
SW1P 3BT

Please only use this option in exceptional circumstances.

Confidentiality of your responses

16. Information provided in your response to this consultation, including personal information, may be subject to publication or disclosure under the Freedom of Information Act 2000, the Data Protection Act 2018, or the Environmental Information Regulations 2004.

17. If you want all, or any part, of a response to be treated as confidential, please explain why you consider it to be confidential.

18. If a request for disclosure of the information you have provided is received, your explanation about why you consider it confidential will be taken into account, but no assurance can be given that confidentiality can be maintained. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

19. The Department for Education will process your personal data (name and address and any other identifying material) in accordance with the Data Protection Act 2018 and, your personal information will only be used for the purposes of this consultation. Your information will not be shared with third parties unless the law allows it.

20. You can read more about what the Department does when we ask for and hold your personal information in our personal information charter: DfE personal information charter.

21. Please also see the privacy notice published alongside this consultation.

Deadline

The consultation closes on 21 July 2024 at 5pm.

Equality Impact Assessment

22. An Equality Impact Assessment (EIA) has been conducted and is published alongside this consultation. The EIA will be kept under review and if new relevant information comes to our attention, it will be considered and factored into the EIA.

Questions

23. The questions that will form this consultation have been divided into the following categories:

- Personal information
- Subject content
- Equalities

24. You may want to answer all or just some of the questions. In either case, your answers will be carefully considered. A link to the proposed subject content is included towards the beginning of this consultation. A brief rationale for certain inclusions has also been included underneath questions where appropriate.

Personal information (Questions 1 to 9)

The following nine questions are about your personal details and contact preferences. It would be helpful if you would first give some information about yourself as context to your other responses.

1. What is your name?

First Name ……

Last Name ……

2. What is your email address?

If you enter your email address you will automatically receive an

acknowledgement email when you submit your response.

Email address: ……..

Please note: It is helpful to have your email address if we want to contact you about your answers to the questions in this consultation. You do not have to give your email address, and your views will be considered whether or not you give your email address.

3. Are you happy to be contacted directly about your response?

(required) (insert options): Yes; No

The Department may wish to contact you directly about your responses to help our understanding of the issues. If we do, we will use the email address you have given above.

4. Are you responding as an individual or part of an organisation?

(required) (insert options): Individual; organisation

5. If you are responding as an individual, how would you describe yourself?

(required) Choose an item: (insert options): student; parent; teacher; subject leader, head teacher; other.

If 'other' selected, please specify here:

……..

6. If you are responding for an organisation, what type of organisation is this?

(required) Choose an item: (insert options): school; college; university; stakeholder organisation; awarding organisation; industry; other

If 'other' selected, please specify here:

……..

7. What is the name of your organisation?

……..

8. What is your role within the organisation?

……

9. Would you like us to keep your responses confidential and not list your name when publishing the consultation response on gov.uk? Please note this question applies to all (individuals and organisations).

(required) (insert options): Yes; No

Computer science GCSE subject content (Questions 10 – 14)

The following five questions are divided into sections which reflect the format of the proposed subject content.

(Please note that no question is included on the 'Subject Aims and Learning Outcomes' section. The level of change here is limited to the addition of the one word ('computationally'), which does not require consultation.)

Introduction (Question 10)

10. Is the proposed new introductory paragraph clear and unambiguous?

(required) (insert options): Yes; No

If no, or you wish to give further detail on your views, please explain:

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Knowledge and understanding – Questions 11 - 13

11. Is the knowledge and understanding set out in this section clear and unambiguous?

(required) (insert options): Yes; No

If no, or you wish to give further detail on your views, please explain:

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12. Do you support the opportunity for visual programming languages to be used in meeting the GCSE's programming requirements, in addition to textual ones?

(required) (insert options): Yes; No

If no, or you wish to give further detail on your views, please explain:

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13. Do you agree that computer science students whose GCSE programming study is completed using a visual, rather than textual, programming language, will <u>not</u> be disadvantaged on progression to A level study, which mandates textual programming?

(required) (insert options): Yes; No

If no, or you wish to give further detail on your views, please explain:

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Skills – Question 14

14. Is the Skills section of the subject content clear and unambiguous?

(required) (insert options): Yes; No

If no, or you wish to give further detail on your views, please explain:

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Equalities – Question 15 to 16

In accordance with the Equality Act 2010, Ministers must have "due regard", when making decisions, to the need to eliminate unlawful discrimination; advance equality of opportunity; and foster good relations, in relation to protected characteristics. The Department has been taking this requirement into account in developing the proposed draft subject content.

The relevant protected characteristics are age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation.

15. Do any of the proposals have the potential to have a disproportionate impact, positive or negative, on specific groups, in particular those who share a 'protected characteristic' (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation)?

(required) (insert options): Yes; No

If yes, please explain:

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16. How could the proposed subject content of the GCSEs be altered to:

- better eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Equality Act 2010;

- better advance equality of opportunity between persons who share a protected characteristic and those who do not;
- better foster good relations between people who share a protected characteristic and those who do not.

Please provide evidence to support your response.

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- End of questions -

Department for Education

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