



Department
for Education

Consultation Response Form

Consultation closing date: 20 August 2013
Your comments must reach us by that date

Reformed GCSE subject content consultation

If you would prefer to respond online to this consultation please use the following link: <https://www.education.gov.uk/consultations>

Publication

Information you provide in your response to this consultation may be subject to publication or disclosure in accordance with the Freedom of Information Act 2000.

Confidentiality

Please make it clear if you want all/any part of your response to be treated as confidential and explain why. If a request for disclosure of the information you have provided is received by DfE, your explanation 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.

Please tick if you want us to keep your response confidential.	
Reason for confidentiality:	

Personal data

For the purposes of the Data Protection Act, DfE is the data controller for any personal data you supply in response to this consultation. DfE will process all personal data (such as your name, address and any other identifying information) in accordance with the Data Protection Act 1998. In most circumstances, this means that your personal data will not be disclosed to third parties.

Please do **not**:

- provide information in comments boxes that might identify you unless you are content for that information to be released into the public domain; or
- provide information in your response that might lead to the identification of other living individuals

Name: Charlie Stripp	
Please tick if you are responding on behalf of your organisation.	<input checked="" type="checkbox"/>
Name of Organisation (if applicable): Mathematics in Education and Industry (MEI)	
Address: MEI Monckton House Epsom Centre White Horse Business Park Trowbridge Wiltshire BA14 0XG	

Information sharing

The Office of Qualifications and Examinations Regulation (Ofqual) is undertaking a parallel consultation on regulatory conditions for GCSEs. Please tell us if you or your organisation has responded or is intending to respond, to Ofqual's consultation:

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>
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Please only respond to the next statement if you have ticked 'no' or 'don't know' above:

If you provide comments to us that are relevant to Ofqual's consultation, we intend to forward your responses to them so they can be considered by Ofqual. If you do not want us to do this then please opt-out by ticking the box below:

I do <u>not</u> want DfE to forward my response to this consultation to Ofqual	<input type="checkbox"/>
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Please mark the box that best describes you as a respondent.

<input type="checkbox"/> Academy and/or Free School	<input type="checkbox"/> Comprehensive School	<input type="checkbox"/> State Selective School
<input type="checkbox"/> Independent School	<input type="checkbox"/> Special School	<input type="checkbox"/> Sixth Form Only
<input type="checkbox"/> Subject Association	<input checked="" type="checkbox"/> Organisations representing teachers	<input type="checkbox"/> Parent

<input type="checkbox"/>	Young Person	<input type="checkbox"/>	Higher Education	<input type="checkbox"/>	Further Education
<input type="checkbox"/>	Local Authority	<input type="checkbox"/>	Teacher	<input type="checkbox"/>	Governor
<input type="checkbox"/>	Employer/Business sector	<input type="checkbox"/>	Awarding Organisation		

Please Specify:

MEI is an independent curriculum development body for mathematics and a major provider of Mathematics CPD.

MEI is also a major provider of online support to learners of mathematics.

MEI is a registered charity.

If you have an enquiry which is related to the DfE e-consultation website or the consultation process in general, you can contact the Ministerial and Public Communications Division by e-mail: consultation.unit@education.gsi.gov.uk or by telephone: 0370 000 2288 or via the Department's ['Contact Us'](#) page.

Questions 1-6 below ask you to give your views with reference to a specific subject suite:

1. *English,*
2. *Mathematics*
3. *Sciences*
4. *Geography*
5. *History*
6. *Modern and ancient languages.*

You do not need to give answers for all the subject suites - please answer only with respect to those subjects on which you have a particular view.

Please ensure that you answer questions 7-11 as well – we would like responses from everyone on those.

1. English, including English language and English literature

1a Do **the proposed subject content and assessment objectives** for English, which includes English language and English literature, cover the appropriate knowledge and understanding for GCSEs in these subjects?

<input type="checkbox"/> Yes	<input type="checkbox"/> No -insufficiently demanding	<input type="checkbox"/> No- overly demanding
<input type="checkbox"/> Not Sure		

Comments:

1b Is **the relative weighting of the assessment objectives** right for English, which includes English literature and English language?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments:

1c Has the **right practical content** for English language been identified to allow students to gain the skills to progress in the subject, beyond the content which can be examined externally and reliably included in the GCSE grade?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments:

1d Do the proposed subject content and assessment objectives for English, which includes English literature and English language, **provide assurance that essential knowledge taught at the earlier key stages is built upon and represented adequately?**

Yes No Not Sure

Comments:

1e Will the proposed qualifications in English, which includes English language and English literature, **secure sound progression for the purposes of further academic and vocational study?**

Yes No Not Sure

Comments:

2. Mathematics

2a Do **the proposed subject content and assessment objectives** for mathematics cover the appropriate knowledge and understanding for GCSEs in this subject?

Yes



No -insufficiently demanding



No-overly demanding

Not Sure

Comments:

The response box options for this question are poorly worded. Whether or not the content and assessment objectives are appropriate is not necessarily related to its level of demand. Instead, as the question suggests, their appropriateness is determined by whether they cover the appropriate knowledge and understanding for GCSEs in mathematics.

The proposed subject content and assessment objectives document states: “GCSE specifications in mathematics should provide a broad, coherent, satisfying and worthwhile course of study. They should encourage students to develop confidence in, and a positive attitude towards, mathematics and to recognise the importance of mathematics in their own lives and to society”. This is a worthy and important aim. The increased availability and use of statistical data makes it more important than ever that students understand statistics in terms of interpreting real data, rather than as a list of techniques to be learnt in order to answer examination questions.

The proposed content does not cover the appropriate knowledge and understanding for GCSEs in mathematics because it does not include sufficient statistical content, which should include the design of surveys and experiments, and the appreciation and interpretation of statistics through the statistical problem solving cycle. An understanding of statistical problem-solving is a vital skill for higher education and employment.

Some argue that statistics should be addressed in other subjects. However, we believe the primary source of teaching in statistics must be through the GCSE Mathematics curriculum. The Royal Statistical Society report TEACHING STATISTICS ACROSS THE 14 – 19 CURRICULUM (2005) stated:

‘We consider that removing much of statistics from GCSE mathematics would mean that any intellectual coherence in the teaching of statistics would be lost. We believe that the teaching of statistics would become highly fragmented, inappropriate and unbalanced the teaching within other disciplines would often be undertaken by teachers who are no doubt well skilled in their own subjects but would have little or no knowledge of statistics and would be less sure of underlying unifying principles. They certainly would not be fully aware of the generality and

ubiquity of application of statistical methods across much of the curriculum. It is likely that pupils would find themselves learning isolated techniques here and there; they would see statistics as a marginally relevant technique in some areas of their studies, not as a pervasive and important life skill for all situations. The fundamental importance of the subject would be lost; general statistical literacy would certainly not be enhanced. Even worse, many pupils may in practice not meet the subject at all, depending on the particular other disciplines that they took.”

The Royal Statistical Society Centre for Statistical Education’s FINAL PROJECT REPORT: HANDLING DATA AND STATISTICS (2006) included the following recommendation:

“We recommend that the statistics and data handling content of the mathematics curriculum should be seeded through real world examples drawn from science, geography and other subjects but should be retained within the mathematics curriculum.”

In order to ensure that students taking a variety of other subjects at GCSE are taught statistics in a meaningful way, the statistical problem solving cycle should be included explicitly within the GCSE Mathematics content; this will enable the statistical statements in the proposed content to make sense; inferring, interpreting and predicting (which are included in the proposed content) are only meaningful with reference to real contexts.

2b Is **the relative weighting of the assessment objectives** right for mathematics?

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments:

The requirement to distribute 40% AO1 marks across questions which also assess AO2 and AO3 is very welcome. It should help to ensure that assessment has a significant focus on questions that involve using mathematics to analyse situations and solve meaningful problems. This will help to emphasise why mathematics occupies such a key place in the curriculum; mathematical problem solving is a hugely powerful transferable skill. The ability to answer ‘standard’ examination questions is not. It is hoped that this change of emphasis will help many more students to understand that mathematics will be a vital tool in their future education and employment, rather than being a subject whose only value is to answer examination questions and which should, therefore, be dropped at the earliest opportunity.

To further emphasise the importance of problem solving as the key purpose of mathematics, the relative weightings of assessment objectives 2 and 3 should be swapped, so that AO2 is 20 – 30% and AO3 is 30 – 40%. This will also help ensure that students across the ability range are taught to apply mathematics they have learned to solve meaningful problems in context. Reports such as ACME's MATHEMATICAL NEEDS (2011) highlight that this skill is greatly valued by employers and higher education. Increasing the weighting of AO3 will help to address the frequently-expressed criticism from employers and higher education that a very high proportion of students, including those with high grades in GCSE Mathematics, are unable to use the mathematics they have learned to solve real problems in context.

It is essential to include exemplification of questions that meet the new assessment objectives. This will help ensure a consistent interpretation by the awarding bodies.

It is vital that regulation of the Mathematics GCSEs ensures that the spirit, as well as the letter, of the Assessment Objectives is met. If not, it is likely that questions will quickly become formulaic and predictable, so that students are 'taught-to-the-test' (or even to the mark scheme!), rather than their teaching and learning being focused on developing mathematical fluency, reasoning and problem solving skills. This would subvert the intention of the new National Curriculum and prevent any real improvement in mathematics education at this level.

2c Has the right content for mathematics been identified for high achievers, **including those going on to study A levels** in science, technology, engineering and/or mathematics (STEM)?

Yes

No

Not Sure

Comments:

If the appropriate statistical knowledge were included (see 2a), the overall content would provide a more appropriate preparation for high achievers to progress to STEM subjects at level 3. However, the content of GCSE Mathematics, particularly (but by no means exclusively) the statistical elements, is also vital for progression to non-STEM subjects at level 3, as is shown in the 2012 report THE FUTURE OF STATISTICS IN OUR SCHOOLS AND COLLEGES, sponsored by the Institute of Actuaries:

"From working out the best deals in the supermarket to understanding trends and probabilities that affect decisions in business and politics, people's ability to interpret data and their sources has never been more important. A good grounding in the application and use of statistics in schools is essential to everyday life and

future education. That is why the Actuarial Profession is delighted to be sponsoring this timely and relevant report.”

Jane Curtis, President of the Institute and Faculty of Actuaries

We believe that GCSE Mathematics should allow students to demonstrate mastery of what they have learnt. The VORDERMAN REPORT (2011) stated:

“It is sometimes suggested that restricting some pupils to a smaller curriculum would impair their chances of subsequent development. We think that argument needs to be challenged. Surely the greatest damage that can be done to young people’s future prospects is to teach them that they are unable to understand mathematics? By contrast, someone with sufficient confidence in the basics can always pick up more topics later on”.

We recommend identifying the mathematics that is necessary for all students and examining this separately through a restricted-grade ‘Core’ GCSE Mathematics that would assess mastery of the fundamental content for all students. Higher achievers would then take an additional paper that covered the whole of the content and allowed access to the highest grades.

It is essential that the curriculum which each student follows is coherent. The content that is identified for the high achievers in the current draft is not always consistent and needs more careful thought.

The difficulty of a mathematics question depends on much more than the ‘level’ of mathematical content needed to answer it. It is possible to ask ‘hard’ questions that require only simple mathematics to solve them (e.g. complicated questions involving fractions and percentages such as *‘If a grape is 80% water and $\frac{3}{4}$ of the water is removed when it is dried to make a raisin, what proportion of the raisin is water?’*).

2d Do the proposed subject content and assessment objectives for mathematics provide **assurance that essential knowledge taught at the earlier key stages is built upon and represented adequately?**

Yes

No

Not Sure

Comments:

The content has clearly been designed to reinforce and build upon the KS3 Programme of Study for Mathematics.

The reason we have answered 'No' is because of the inadequate level of statistics in the GCSE subject content and because more thought needs to be given to the distinction between the mathematics which all students should master and that which is more suitable for the higher achievers.

2e Will the proposed qualifications in mathematics secure **sound progression for the purposes of further academic and vocational study?**

Yes

No

Not Sure

Comments:

The statistical content is insufficient to secure sound progression for the purposes of further academic and vocational study, and the content currently identified for high achievers lacks coherence. See the responses to 2a and 2d for details.

3. Science, including biology, chemistry, physics and combined science

3a Do **the proposed subject content and assessment objectives** for science, which includes biology, chemistry, physics and combined science, cover the appropriate knowledge and understanding for GCSEs in these subjects?

<input type="checkbox"/> Yes	<input type="checkbox"/> No -insufficiently demanding	<input type="checkbox"/> No- overly demanding
<input type="checkbox"/> Not Sure		

Comments:

3b Is **the relative weighting of the assessment objectives** right for sciences, which includes biology, chemistry, physics and combined science?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments:

3c Has the right **practical content** for science been identified to allow students to gain the skills to progress in the subject?

Yes

No

Not Sure

Comments:

3d Do the proposed subject content and assessment objectives for sciences, which includes biology, chemistry, physics and combined science, provide **assurance that essential knowledge taught at the earlier key stages is built upon and represented adequately?**

Yes

No

Not Sure

Comments:

3e Will the proposed qualifications in sciences, which includes biology, chemistry, physics and combined science, secure **sound progression for the purposes of further academic and vocational study?**

Yes

No

Not Sure

Comments:

3f Will the combined science double award provide students with a sufficiently secure basis for progression to A level study of each of biology, chemistry and physics?

Yes

No

Not Sure

Comments:

4. Geography

4a Do **the proposed subject content and assessment objectives** for geography cover the appropriate knowledge and understanding for GCSEs in this subject?

<input type="checkbox"/> Yes	<input type="checkbox"/> No -insufficiently demanding	<input type="checkbox"/> No- overly demanding
<input type="checkbox"/> Not Sure		

Comments:

4b Is **the relative weighting of the assessment objectives** right for geography?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments:

4c We are working on options to ensure that fieldwork takes place. One option might be a letter, submitted to AOs and signed by the head teacher and head of geography, which states that fieldwork has taken place beyond the classroom and school grounds. Do you think this would be **an effective measure to demonstrate that fieldwork has taken place beyond the classroom and school grounds?**

Yes

No

Not Sure

Do you have any other suggestions to verify that fieldwork has taken place beyond the classroom and school grounds?

4d Do the proposed subject content and assessment objectives for geography provide **assurance that essential knowledge taught at the earlier key stages is built upon and represented adequately?**

Yes

No

Not Sure

Comments:

4e Will the proposed qualifications in geography secure **sound progression for the purposes of further academic and vocational study?**

Yes

No

Not Sure

Comments:

5. History

5a Do **the proposed subject content and assessment objectives** for history cover the appropriate knowledge and understanding for GCSEs in this subject?

<input type="checkbox"/> Yes	<input type="checkbox"/> No -insufficiently demanding	<input type="checkbox"/> No- overly demanding
<input type="checkbox"/> Not Sure		

Comments:

5b Is the **relative weighting of the assessment objectives** right for history?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments:

5c Should students be encouraged, as part of their GCSE history studies, to undertake **a historical investigation that gives them the opportunity to conduct independent research into a historical issue, event or process of their choosing resulting in an extended essay?**

Yes

No

Not Sure

If so, how can this be achieved best?

5d Do the proposed subject content and assessment objectives for history provide **assurance that essential knowledge taught at the earlier key stages is built upon and represented adequately?**

Yes

No

Not Sure

Comments:

5e Will the proposed qualifications in history secure **sound progression for the purposes of further academic and vocational study**, including encouragement of the ability to conduct independent study in the subject?

Yes

No

Not Sure

Comments:

6. Modern and ancient languages

6a Do **the proposed subject content and assessment objectives** for modern and ancient languages cover the appropriate knowledge and understanding for GCSEs in these subjects?

<input type="checkbox"/> Yes	<input type="checkbox"/> No -insufficiently demanding	<input type="checkbox"/> No- overly demanding
<input type="checkbox"/> Not Sure		

Comments:

6b Is **the relative weighting of the assessment objectives** right for modern and ancient languages?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments:

6c Do the proposed subject content and assessment objectives for modern and ancient languages provide **assurance that essential knowledge taught at the earlier key stages is built upon and represented adequately?**

Yes

No

Not Sure

Comments:

6d Will the proposed qualifications in modern and ancient languages secure **sound progression for the purposes of further academic and vocational study?**

Yes

No

Not Sure

Comments:

Please answer all the remaining questions, which include questions on literacy, numeracy and impact on specific groups of students.

7 Does the English language content cover the **key elements of literacy needed for employment or further study?**

Yes

No

Not Sure

Comments:

8 Does the mathematics content cover **the key elements of numeracy needed for employment or further study?**

Yes

No

Not Sure

Comments:

The poor treatment of statistics, as highlighted in 2a, means that the mathematics content does not cover the key elements of numeracy needed for employment or further study.

Another major concern is in how the awarding bodies interpret the Assessment Objectives. An increased emphasis on AO3, as suggested in our response to 2b, would help ensure the key elements of numeracy are properly covered.

9 Do any of the proposals have potential to have a **disproportionate impact, positive or negative, on specific pupil groups**, in particular the 'protected characteristic' groups? (The relevant protected characteristics are disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex and sexual orientation); if they have potential for an adverse impact, how can we reduce this?

Yes - Positive impact Yes - Negative impact No
 Not Sure

Comments:

10 Have you any further comments?

Comments:

11 Please let us have your views on responding to this consultation (e.g. the number and type of questions, whether it was easy to find, understand, complete etc.).

Comments:

As stated in our response to 2a, the response box options for this question are poorly worded. Whether or not content is appropriate is not necessarily related to its level of demand.

Thank you for taking the time to let us have your views. We do not intend to acknowledge individual responses unless you place an 'X' in the box below.

Please acknowledge this reply.



E-mail address for acknowledgement: charlie.stripp@mei.org.uk

Here at the Department for Education we carry out our research on many different topics and consultations. As your views are valuable to us, please confirm below if you would be willing to be contacted again from time to time either for research or to send through consultation documents.



Yes



No

All DfE public consultations are required to meet the Cabinet Office [Principles on Consultation](#)

The key Consultation Principles are:

- departments will follow a range of timescales rather than defaulting to a 12-week period, particularly where extensive engagement has occurred before
- departments will need to give more thought to how they engage with and consult with those who are affected
- consultation should be 'digital by default', but other forms should be used where these are needed to reach the groups affected by a policy; and
- the principles of the Compact between government and the voluntary and community sector will continue to be respected.

Responses should be completed on-line or emailed to the relevant consultation email box. However, if you have any comments on how DfE consultations are conducted, please contact Carole Edge, DfE Consultation Coordinator, tel: 0370 000 2288 / email: carole.edge@education.gsi.gov.uk

Thank you for taking time to respond to this consultation.

Completed responses should be sent to the address shown below by 20 August 2013

Send by post to:
Qualification and Assessment Division
Department for Education
L2
Sanctuary Buildings
Great Smith Street
London
SW1P 3BT

Send by e-mail to: GCSEcontent.consultation@education.gsi.gov.uk