



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

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

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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: Moussa Haddad	
Please tick if you are responding on behalf of your organisation.	<input checked="" type="checkbox"/>
Name of Organisation (if applicable): Royal Statistical Society	
Address: 12 Errol Street, London. EC1Y 8LX.	

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 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: Learned society

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?**

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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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?**

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

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

Comments: Many of these comments are cross-curricular in their scope, but since mathematics is where statistics has been historically placed, and given that statistical techniques remain in the GCSE subject content for mathematics, it seems most appropriate to comment here.

Overall, we believe that the current approach to statistics, whereby the data-handling cycle is taught as part of mathematics, has worked well; but also that it presents challenges, particularly with mathematics teachers feeling uncomfortable with how to treat statistics as part of mathematics. However, the new proposals, in which the statistics cycle is taken out of maths and is integrated in other subjects, has not as things stand been proven to work either. Whichever approach or blend of approaches is ultimately taken, a number of issues will require serious consideration, in relation both to curriculum content and to teacher skills and support. We discuss some of this in our response to question 10 ('further comments').

We strongly welcome the statement, in the draft national curriculum framework document (section 5, 'Numeracy and mathematics', p.9), that teachers should develop pupils' numeracy and mathematical reasoning *in all subjects* [emphasis added]. We welcome, moreover, the reference to a data-handling cycle within the definition of numeracy and mathematics, as this is consistent with the Society's view that statistics needs to be taught as a holistic problem-solving cycle, not as a series of techniques.

Statistics, properly understood, is fundamentally about numerical information in context – data – and about applying quantitative skills to real problems that relate to it. It is not about a collection of techniques in isolation, but about creatively applying those techniques in the context of a problem-solving cycle. As such, it promotes a way of understanding the world that is transferable across a range of subjects and situations.

Ensuring that the government achieves its stated aim of developing pupils' numeracy and mathematical reasoning in all subjects will be a complex endeavour. In our response, we consider how this can be achieved in relation to the data-handling aspect of this definition. We take there to be three elements that are

critical in achieving this goal, the first of which relates to subject content, which we consider in this section, and two which relate to the broader education infrastructure and in-school practice, which we consider in our answer to question 10 (further comments). In summary, these three elements are:

- anchoring statistics appropriately in the national curriculum, with a coherent and consistent description of the statistics cycle across all subject specifications. This would mean the use of the same terminology and concepts across all subjects where statistics is being used (which, based on forthcoming research commissioned by the Society, is a wide range of subjects, beyond science and geography, where use of the data-handling cycle is currently prescribed in the new proposals);
- a significant increase in the statistics content of both initial teacher training and further teacher CPD. We believe there are significant skills issues in teacher training for the new approach (both initial and CPD), and we are concerned that other subject teachers will lack the appropriate numerical skills (or appetite) to start teaching statistics well without some serious efforts in this area;
- the creation of a new post of statistics co-ordinator in every school – to provide practical support and advocacy for the two imperatives described above.

To some extent, the challenges here reflect a tension between the cross-cutting nature of statistics – which is reflected in the extent to which data-handling appears in different subjects – and the silo-ed approach to subjects within the curriculum as a whole. Our suggestions here aim to provide a way forward to resolve this tension, but we believe it important that the government consider how to achieve this in the longer term.

We would also urge the government to consider the ways in which reforms to statistics teaching at GCSE level (and below) interact with proposed changes to the post-16 curriculum. There has been increasing interest expressed, including from the Under Secretary of State for Education and Childcare, in revising post-16 mathematics and statistics provision, drawing on the New Zealand Mathematics and Statistics model, which has been both successful in increasing participation and – linked to this in both cause and effect – welcomed and endorsed by higher education institutions. In addition, there are currently in development new post-16 quantitative methods qualifications, which will seek to provide students with quantitative problem-solving skills that they can transfer into other subjects and everyday life.

As forthcoming research commissioned by the Royal Statistical Society – ‘A world full of data: Statistics opportunities across A-level subjects’, Roger Porkess (forthcoming, September 2013) – will show, there are also opportunities across the bulk of A-level subjects for enhancing those subjects, and better preparing students for further study, through the increased teaching of statistics. With these various

changes in train or in prospect at the post-16 level, each of which may reduce the extent to which statistics is taught in a silo-ed fashion, it would be valuable to consider how best the pre-16 education landscape could prepare students for this direction of travel.

Anchoring statistics

We welcome the explicit reference to use of the data-handling cycle in both the science and geography subject content and assessment objectives. It is crucial, however, that the approach of statistics being taught, understood and applied as a cycle of activity rather than as merely a series of techniques is anchored somewhere within the curriculum. We have concerns about whether that is achieved adequately in the proposals as they currently stand.

In order for statistics to be taught and understood coherently across all subjects where it is required, it is crucial that a consistent approach is followed across the curriculum to teaching the concept of statistical problem solving, as well as consistency in terminology and notation.

Specific comments on statistics and probability content within mathematics

It is crucial that statistics, as taught within mathematics and elsewhere, is transferable across subjects. As discussed above, this means ensuring that techniques taught are anchored in a problem-solving, data-handling cycle approach.

In addition to these broader comments, we also have a number of specific comments on the statistics content of the GCSE subject content and assessment objectives within mathematics:

- The five statistics statements include words such as ‘inferring, interpret, analyse, predictions and trends’. These only make sense in reference to a context, and so it is essential to provide a context for these techniques through the statistical problem-solving cycle (e.g. infer or interpret from what?).
- In statement 5, there is an implication that interpolation and extrapolation are equally valid; this is far from the case. Context is important here.
- We would add an additional statistics statement, to the effect of ‘collect data in a range of situations, with a variety of techniques including surveys and questionnaires, as well as exploring computer databases’.
- To probability statement 3, ‘relate relative expected frequencies to theoretical probability, using appropriate language and the 0-1 scale’, we would add a sub-statement to the effect ‘3a: relate personal and subjective ideas of probability to everyday events in making decisions’.

- In the appendix, there are two formulae for probability which students should be able to select from a list and apply:

Where $P(A)$ is the probability of outcome A and $P(B)$ is the probability of

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A \text{ given } B)P(B)$$

outcome B:

We do not believe that either of these has a place at GCSE.

For the former, 'A or B' has always meant 'either A or B' at GCSE, and some teachers will not understand the formula means $A \cup B$. Moreover, it would be more conducive to student understanding if they used the principle with a Venn diagram rather than applying a formula which they do not understand.

For the latter, again, the principle from a tree diagram is fine. There is little value in the use of the formula at this level: it is better to wait till A-level, when the proper symbolism can be used and understood.

In terms of the second formula, it is in any case not appropriately expressed: one would normally have the conditional probability first and express this as the quotient of the other two terms; otherwise, it makes little sense.

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

Yes

No

Not Sure

Comments: We would suggest increasing the weighting assigned to A03, which is largely concerned with problem-solving. It may be possible, also, to shorten the list of bullet points within A03: there are at present 7 objectives here, in comparison with 3 for both A01 and A02, both of which have a higher weighting presently assigned to them. We would welcome, if and when the sub-objectives in A03 are revisited, making specific reference to statistical problem-solving as part of this, as this will be helpful in ensuring that the statistical techniques assessed here are put in the context of a cycle of activity within the subject.

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:

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:

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

Yes

No

Not Sure

Comments: Mathematics is of crucial importance across a range of subjects, as is statistics. As discussed above (question 2a), it is crucial that statistics is seen as constituting a cycle of problem-solving activity, rather than a series of isolated techniques. It should be recognised, also, that the three areas of probability, statistics (in the narrow sense of techniques as described within the mathematics subject content) and the data-handling cycle are independent but overlapping. It is vital that due consideration is given to linking the statistics taught within mathematics to the data-handling cycle, otherwise there is a risk that the techniques taught therein are not fully transferable to other subjects, such as science and geography, in which the data-handling cycle is slated to play a more prominent role.

Forthcoming research commissioned by the Royal Statistical Society – ‘A world full of data: Statistics opportunities across A-level subjects’, Roger Porkess (forthcoming, September 2013) – demonstrates that there are significant

opportunities for teaching statistics at that level across a far wider range of subjects than might be presumed, enhancing that subject, and providing students with a firmer foundation for further study. This serves to emphasise the importance of considering the needs of other subjects, and not merely mathematics and statistics themselves, when conceiving subject content and assessment objectives for mathematics GCSE.

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: In our answers to the questions on GCSE science, we focus on the perspective of the teaching of statistics in the subject(s), particularly pertinent in view of the proposal to move a large part of the teaching of the data-handling cycle into subjects outside of mathematics.

We welcome the explicit reference to use of the data-handling cycle under each of the heading of 'working scientifically', the specific subject content, and the assessment objectives.

In order, however, for the statistics learnt within mathematics to be applied within other subjects, including science, it is vital that the approach to teaching that content is also grounded in a cycle of activity, rather than as a set of techniques. Otherwise, there is a major risk that content learnt in mathematics will not be transferable to other subjects and contexts. We see a role for our proposed statistics co-ordinator within a school in ensuring that such an approach is followed across all subjects, including science.

It is important, also, to note that increasing the use of the data-handling cycle in science will have significant implications for classroom practice. In order for the data-handling cycle to be adequately taught and learnt within science, the amount of such work undertaken will need to be substantially increased. This is potentially a large change, which will need to be strongly communicated within the new subject requirements; and the way in which assessment is carried out in the subject will also have a substantial impact on the extent to which data-handling becomes part of science as practised in the classroom. In addition, there is a need to consider the training – both initial and CPD – of science teachers in statistics, and there will be a role for our proposed statistics co-ordinator in ensuring that this and changes in classroom practice do in fact take place (see response to question 10 for more detail on both these points).

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: We welcome the strong emphasis within the assessment objectives for sciences of 'application, analysis, evaluation and problem solving'.

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

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments: See answer to question 3a for our views on the teaching of the data-handling cycle within science.

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?**

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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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?**

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Not Sure
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Comments: While we do not have specific comments in relation to this question, not being subject experts, we would draw the government's attention to forthcoming research commissioned by the Royal Statistical Society – 'A world full of data: Statistics opportunities across A-level subjects', Roger Porkess (forthcoming, September 2013). This demonstrates that there are significant opportunities for teaching statistics at that level across a far wider range of subjects than might be presumed, enhancing the subject in question, and providing students with a firmer foundation for further study. With many subjects, including sciences, becoming increasingly quantitative at HE level, and with the increasing demand from employers for quantitative problem-solving skills, it is crucial that this aspect is reflected in subjects such as sciences. With this in mind, we are encouraged that the subject content and assessment objectives both place increased emphasis on the data-handling cycle within sciences.

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: See comments in response to previous question (3e).

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: In our answers to the questions on GCSE geography, we focus on the perspective of the teaching of statistics in the subject, particularly pertinent in view of the proposal to move a large part of the teaching of the data-handling cycle into subjects outside of mathematics.

We welcome the explicit reference to use of the data-handling cycle under each of the heading of 'maps, fieldwork and geographical skills', the specific subject content, and the assessment objectives.

In order, however, for the statistics learnt within mathematics to be applied within other subjects, including science, it is vital that the approach to teaching that content is also grounded in a cycle of activity, rather than as a set of techniques. Otherwise, there is a major risk that content learnt in mathematics will not be transferable to other subjects and contexts. We see a role for our proposed statistics co-ordinator within a school in ensuring that such an approach is followed across all subjects, including geography.

It is important, also, to note that increasing the use of the data-handling cycle in geography will have significant implications for classroom practice. In order for the data-handling cycle to be adequately taught and learnt within geography, the amount of such work undertaken will need to be substantially increased. This is potentially a large change, which will need to be strongly communicated within the new subject requirements; and the way in which assessment is carried out in the subject will also have a substantial impact on the extent to which data-handling becomes part of geography as practised in the classroom. There is a significant role for fieldwork in the subject in providing the place within the curriculum for the data-handling cycle to be approached in full (see answer to question 4c). In addition, there is a need to consider the training – both initial and CPD – of geography teachers in statistics, and there will be a role for our proposed statistics co-ordinator in ensuring that this and changes in classroom practice do in fact take place (see response to question 10 for more detail on both these points).

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

Yes

No

Not Sure

Comments: We welcome the emphasis on both skills and application within the assessment objectives, including the specific reference to 'skills used to respond to fieldwork data and contexts' and 'application to fieldwork context(s)'.

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?

While we do not have specific comments on how to ensure fieldwork takes place, we would note that fieldwork is of paramount importance as the place within the subject where the full data-handling cycle can be put into practice. For this reason, we fully support efforts to ensure that it takes place.

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: While we do not have specific comments in relation to this question, not being subject experts, we would draw the government's attention to forthcoming research commissioned by the Royal Statistical Society – 'A world full of data: Statistics opportunities across A-level subjects', Roger Porkess (forthcoming, September 2013). This demonstrates that there are significant opportunities for teaching statistics at that level across a far wider range of subjects than might be presumed, enhancing that subject, and providing students with a firmer foundation for further study. With many subjects, including geography, becoming increasingly quantitative at HE level, and with the increasing demand from employers for quantitative problem-solving skills, it is crucial that this aspect is reflected in subjects such as geography. With this in mind, we are encouraged that the subject content and assessment objectives both place increased emphasis on the data-handling cycle within geography.

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: One of the key skills which needs promoting is the ability to interpret and explain the conclusions which can be drawn from this activity – including the concept of uncertainty. We welcome the reference within the ‘numeracy and mathematics’ section of the draft national curriculum framework document released by the DfE to such an approach. We would, however, recommend expanding the statement from ‘they [pupils] should also understand the cycle of collecting, presenting and analysing data’ to ‘they [pupils] should also understand and be able to apply the cycle of planning, collecting, presenting and analysing data and discuss drawing valid conclusions’.

In terms of whether the mathematics content is sufficient to cover these key elements, we would note that the new proposals shift much of the teaching of the data-handling cycle at this level to other subjects, namely science and geography.

In that sense, the mathematics content does not cover the key elements on its own, but rather than focus on that content in isolation, we feel it more important to consider the extent to which that happens when taken across the GCSE curriculum as a whole. For details on our views on how to achieve that, please refer to our response to question 2a (mathematics subject content and assessment objectives).

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?

<input type="checkbox"/>	Yes - Positive impact	<input type="checkbox"/>	Yes - Negative impact	<input type="checkbox"/>	No
<input type="checkbox"/>	Not Sure				

Comments:

10 Have you any further comments?

As discussed in our answers elsewhere within the specific subject areas where statistics and data-handling are to be taught, beyond curricular issues, it is important to consider issues around implementation within schools, particularly given the shift entailed by the move of the data-handling from mathematics into other subjects. Below, we expand upon two issues raised in our answer to question 2(b): teacher training and co-ordinating statistics within schools.

Teacher training

As things stand, with the data-handling cycle being taught as part of mathematics, there are challenges around teachers' skills and confidence in teaching statistics. This was demonstrated in a report commissioned by the Royal Statistical Society Centre for Statistical Education last year ('Teaching Statistics in British Secondary Schools', September 2012:

http://www.rsscse.org.uk/images/stories/ts_pedagogy_full_report.pdf).

Notwithstanding the concerns expressed elsewhere within our response, we are supportive of the desire to see statistics embedded in other subjects where it can add value. In order for that to be successful, however, it is vital that teachers in all subjects where statistics is to be taught – not solely mathematics teachers – are provided with training to ensure that they are skilled and confident in the discipline. Again, this will require an expansion of the statistics content within initial teacher training for teachers in all relevant disciplines, as well as increased availability and take-up of CPD. Since current mathematics teachers already struggle with statistics, it seems likely that, on average, teachers in other subjects will struggle more. We would therefore welcome a clear commitment from the Department to increase the cross-subject statistics component in both initial teacher training and further CPD. We would be happy to provide further guidance and advice on this topic.

Co-ordinating statistics within schools

In addition to and complementing changes to the national curriculum framework document, and as well as increasing levels of statistics training for teachers, we would recommend that each secondary and tertiary school or college have in place a designated statistics co-ordinator, who is responsible for implementing a coherent approach, fostering the use of statistics across all relevant subjects, and for ensuring that good practice is followed. They will also play an important role in supporting individual teachers, and in helping to build their confidence and skills in teaching statistics. This person should have a detailed knowledge of how statistics can be used in a wide range of subjects taught in the institution.

General comments

More broadly, we are concerned that the short timeframe for these reforms creates the risk of producing low-quality outcomes and negative unintended consequences. There are a number of intersecting developments in education at present, and it is

important that these are considered together appropriately. Reforms of GCSE must take account of the National Curriculum Review from Key Stage 1 to Key Stage 4, assessment reform at GCSE and A-level, accountability reforms, and the drive to increase participation in mathematics post-16 (as well as other post-16 developments as discussed in our response to question 2a). In addition, with changes to GCSE, professional development will required, and sufficient resources should be invested here, as well as time allowed for the development of appropriate training and teaching and other support materials.

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:

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.

X

E-mail address for acknowledgement: m.haddad@rss.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