RSB response to Ofqual consultation on proposed changes to the assessment of GCSEs, AS and A levels in 2021

https://www.gov.uk/government/consultations/proposed-changes-to-the-assessment-of-gcses-as-and-a-levels-in-2021

July 2020

The Royal Society of Biology responded to Ofqual's consultation proposing adjustments to assessment arrangements in 2021, due to the possible ongoing public health restrictions in England due to COVID-19. To inform this response, the Society consulted with RSB's Education and Science Policy Committee, Curriculum Committee, Education Policy Advisory Group, Heads of University Bioscience and Biology Education Research Group, and drew on informal discussions with the Association for Science Education, Institute of Physics, Royal Society and Royal Society of Chemistry, Ofqual and Department for Education.

Question level optionality

1. To what extent do you agree or disagree that the 2021 exams should not include more optional questions than usual?

Strongly Agree	Agree	Neither agree nor disagree	**Disagree**	Strongly disagree

2. Do you have any comments on the use of optional exam questions in the 2021 exams?

Since announcement of partial school closures in March, the Royal Society of Biology has sought to engage with Ofqual, DfE and other science organisations on the necessary actions to support students following the disruptions in 2019/20 and the possibility of further disruption in 2020/21.

- As directed by the Secretary of State for this year's GCSE and A level cohorts, the next cohort of GCSE and A level students should not be disadvantaged by the disruptions they have faced due to the COVID-19 crisis
- Any strategies implemented in reaction to the disruptions this year must consider the 3-5 year implications for student attainment and progression.
- The possibility of further local lockdowns or a national "second wave" must be acknowledged and planned for in the education sector. We should not face a situation in October 2020 or March 2021 where emergency action needs to be taken again, when this period ahead of the school year could have been used to prepare contingency plans.

- Loss of over one fifth of face to face teaching and learning time is a significant and unprecedented change to our education system, mitigations must recognise this and be implemented to support student attainment and progression and wellbeing of students and their teachers
- Either urgent action must be taken to reduce the vast amount of teaching and learning of broad content in 2020/21, or statistical approaches must be taken after papers have been sat to acknowledge the disruptions this year and next.
- Any actions taken should be clearly communicated to teachers, students, parents, further education providers, higher education institutions, and others who use results of these qualifications, to show how examinations in 20201 have maintained validity and reliability.

The Royal Society of Biology feels Ofqual's proposals for the sciences, and indeed across all subjects, do not go far enough in addressing the huge change in student experience and possible time remaining for quality teaching and learning.

The Society would prefer to see planned optionality in certain topic areas for the sciences than inconsistent variations in what schools plan in 2020/21 and unknown consequences for depth of knowledge across a broad range of topic areas in 2021 exams.

The Society regrets that a reduction in examinable content, announced before the school year begins, or a changed to "sampled content" as phrased in the Ofqual document, has not been considered for the sciences in these proposals.

If either optionality, a reduction in sampled content, or a mixture of approaches is taken to reduce assessment burden on students in 2021, shorter or fewer exams would be possible. The Society feels this can be achieved without detrimental impact to the national curriculum or specifications in future years; that it would not undermine the standard of GCSE and A levels, which is set by the depth and level of questions rather than the breadth of topics; and without undermining the importance of hands-on engagement with practical activities.

On optionality:
While evidence conducted under normal circumstances suggests that exams that include optional questions may advantage those that have covered all topics in a course, we would suggest that the alternative: students sitting an exam sampled across 100% of the content and facing questions on topic areas they have not covered in depth due to disruptions, will be far more distressing to students and very likely to impact their attainment. In the current circumstances, centres, teachers and students are not carefully selecting which topics not to cover in depth; they are trying to plan for a second year of a qualification which needs to make up for a loss of one fifth of face to face teaching time.

Optionality could work, and be beneficial, under certain conditions. If optionality was to be considered, teachers and students would need notice on which topics would be grouped together. Exam boards could publish which topics are to be paired together ahead of the exam, so that teachers cover as much content as

possible, but students are able to use revision time to focus on specific topics that will be sampled in the optional questions. This would reduce revision burden under stressed circumstances, whilst still encouraging schools to cover the breadth of the specification if they are able.

The Society recognises inclusion of optional questions would be a significant change to the current GCSE and A level exams in the sciences. However, there is precedent for optional questions in Biology papers e.g. 25 mark essay at the end of the AQA A level Biology paper 3, and precedent for significant change to the normal exam system after this year's emergency response.

Without some adaptation, students will remain at an unfair disadvantage if their school has not been able to provide a full programme of teaching and learning since March which is appropriate for remote and online learning. Even in circumstances where this has been available, many students will not have been able to engage with remote learning due to a lack of digital devices, internet access, a comfortable place to study, or family life disruptions caused by the wider impact of COVID-19 on health, jobs and the economy.

Changing the number and the length of exams

3. To what extent do you agree or disagree that the number of exams taken for each subject in 2021 should be the same as usual?

Strongly Agree	Agree	Neither agree nor disagree	**Disagree**	Strongly disagree

4. Do you have any comments on the number of exams in 2021?

The Royal Society of Biology agrees that if there is no change to the sampled content and students are to be examined with standard papers, that decreasing the number of papers to create longer exams would cause unnecessary unfamiliarity into the exam system.

However, as we would prefer to see optionality or reduced sampled content in 2021 exams, the Royal Society of Biology sees no problem in reducing the number of exams.

If number or length of papers are altered, the Society advises sample specimen papers should be created as is done in the first year of new specifications.

5. To what extent do you agree or disagree that the exams taken in 2021 should not be longer than usual?

Strongly Agree	**Agree**	Neither agree nor disagree	Disagree	Strongly disagree

6. Do you have any comments on the length of exams in 2021?

The Royal Society of Biology agrees that if there is no change to the sampled content and students are to be examined with standard papers, that decreasing the number of papers to create longer exams would cause unnecessary unfamiliarity into the exam system.

However, as we would prefer to see optionality or reduced sampled content in 2021 exams, the Royal Society of Biology sees no problem in reducing the length of exams.

If number and length of papers are altered, the Society advises sample specimen papers should be created as is done for new specifications.

Changes to the exam timetable

7. To what extent do you agree or disagree that the GCSE timetable should start after half term in 2021 if results can still be released on 26 August 2021?

Strongly Agree	**Agree**	Neither agree nor disagree	Disagree	Strongly disagree

8. To what extent do you agree or disagree that the GCSE timetable should start after half term in 2021 even if this necessitates a delay in the release of results?

Strongly Agree	**Agree**	Neither agree nor disagree	Disagree	Strongly disagree

9. What would be the advantages and disadvantages of delaying the start of GCSE exams in 2021?

The Royal Society of Biology feels extending the time for teaching up to the end of May 2021 would be a good approach to introduce more teaching time into the next academic year. The Society is already aware that teachers and students feel the Biology GCSE specification is overly large compared with other sciences, and that in our recent GCSE timetabling research it was found that 78% of schools reported starting GCSE science teaching in Year 9 – in qualitative follow up interviews schools reported the vast amount of content as the reason for requiring the start of GCSE teaching before Year 10.

Any adjustment to the exam timetable may make marking and moderation of papers in time for results day difficult to achieve, and it should be recognised that many markers are also full time teachers, so moving the exam marking period may have significant impact on the wellbeing of teachers in the summer term and holidays after a challenging year. Exam boards must use the time before exam season 2021 to properly prepare to mitigate against overburdening the markers and moderators.

The Society suggests that A level results day should be prioritised to ensure progression into higher education can be achieved, as outlined in our answer to Q13.

For GCSEs, we do not see any problem in delaying results, as long as students are able to progress as planned. We hope that Ofqual and exam boards would advise sixth form providers that they should take a flexible approach to students entering in 2021, and that students should be allowed to begin their post-16 studies even if results are not received by the first day of term.

The Society would expect students remaining in the same centre for sixth form to be allowed to progress into A level studies pending receipt of their results.

Any decision to postpone exams and results days must be made soon and communicated clearly to all involved in exam processes and those that use results of these exams. Students must be able to choose and start A level subjects in 2021 without further disruption to their education.

10. To what extent do you agree or disagree that the A level and AS timetable should start after half term in 2021 if results can still be released on 19 August 2021?

Strongly Agree	**Agree**	Neither agree nor disagree	Disagree	Strongly disagree

11. To what extent do you agree or disagree that the A level and AS timetable should start after half term in 2021 even if this necessitates a delay in the release of results?

Strongly Agree	Agree	**Neither agree nor disagree**	Disagree	Strongly disagree

12. What would be the advantages and disadvantages of delaying the start of A level and AS exams in 2021?

The Royal Society of Biology feels extending the time for teaching up to the end of May 2021 would be a good approach to introduce more teaching time into the next academic year.

Any adjustment to the exam timetable may make marking and moderation of papers in time for results day difficult to achieve, and it should be recognised that many markers are also full time teachers, so moving the exam marking period may have significant impact on the wellbeing of teachers in the summer term and holidays after a challenging year. Exam boards must use the time before exam season 2021 to properly prepare to mitigate against overburdening the markers and moderators.

The Society would suggest that marking and moderation of A level papers should be prioritised over GCSE papers, to enable students to progress to the next stage of education or the work place.

Ofqual should consult with higher education institutions (HEIs) to determine the latest possible date A level results could be awarded that would allow for students to enter in 2021/22 as normal, and investigate whether HEIs would consider pushing back start dates in 2021 as some have done for 2020 entry. It is possible that due to the admissions cycle, including clearing processes, that no adjustment may be possible in 2021. As with teachers, the impact of changing these cycles and timings may detrimentally impact the wellbeing of staff and students due to

extended work on clearing processes over Summer and longer period of uncertainty for students.

The Royal Society of Biology notes that competition for university places may be increased in 2021/22 due to a larger than normal number of deferrals from students this year who are uncertain about calculated grades. The next cohort of Year 13 students would therefore be disadvantaged if the university admissions timings remained the same but results were delayed and clearing opportunities missed.

Any decision to postpone exams and results days must be made soon and communicated clearly to all involved in exam processes and those that use results of these exams. Students must be able to progress to higher education in 2021 without further disruption to their education.

Which subjects are you interested in?

13. We know that some respondents to this consultation will have specific interests in different qualifications and/or subjects. This consultation includes proposals on a subject-by-subject basis. Please use the list below to select the subjects about which you would like to answer questions.
    - Biology GCSE and A level
    - Combined science GCSE (double award)

GCSE Biology

Current assessment arrangements	Proposed assessment arrangements for 2021
100% examination At least 8 practical activities that cover required apparatus and techniques	100% examination Permit observation of demonstrations / simulation to cover required apparatus and techniques **Rationale:** To reduce pressures on teaching time and to accommodate potential on-going public health restrictions

14. To what extent do you agree or disagree with the proposed assessment arrangements for each GCSE subject in 2021?

Strongly Agree	Agree	Neither agree nor disagree	Disagree	**Strongly disagree**

15. Do you have any comments on the proposed assessment arrangements for each GCSE subject in 2021?

The Royal Society of Biology feels an opportunity has been missed to support teachers and students through a planned reduction of sampled content in 2021 exams, and that urgent action needs to be taken by Ofqual, the exam boards, DfE to mitigate against further disadvantaging students. The Royal Society of Biology suggested this in earlier conversations with Ofqual and DfE and regrets that time has been wasted in the last 4-6 weeks which could have been utilised to provide guidance on options for reducing sampled content in 2021, informed by our own curriculum work and by facilitating discussions with our curriculum and assessment expert committee members. We feel this could be achieved without detrimental impact to the national curriculum or specifications in future years, and without undermining the importance of hands-on engagement with practical activities. We further expand on this in relation to the Secretary of State's letter and our informal conversations with Ofqual and DfE, in our answer to question 22 on the equality impact assessment.

The Royal Society of Biology does not wish to see current cohorts of students disadvantaged by the COVID-19 crisis, and would not suggest that adjustments made in these exceptional circumstances should be continued beyond addressing the issues for these current cohorts. The Society has an established curriculum committee, who have spent several years considering the current curriculum, adjustments that could be made in future, and the developments we would like to see in curriculum. We stand by the importance of practical skills and techniques, and the opportunity for students to experience phenomena through observation

and manipulation. Engagement with practical activities improves knowledge and understanding in our subject and while every component of a GCSE or A level qualification is important, we do recognise that some flexibility in the system could be useful in these circumstances and allow knowledge, understanding and skills to be picked up and developed from a different starting point at the next phase of education, if teachers and centres are given enough guidance and time to do so.

We understand that in subsequent conversations with the Department for Education, Ofqual were instructed that no changes should be made to the sampling of content in English, Maths and the sciences at GCSE and A level. The Royal Society of Biology was not consulted as part of these discussions.

We urge Ofqual to fully consider approaches that may be taken to mitigate against the disruption to over one fifth of teaching time in GCSE and A level, and possibly more due to national or local lockdowns, or individual student absence due to COVID-19. There appears to be no consideration of this significant drop in teaching and learning time in the consultation document. There are known and emerging inequalities emerging due to differing school provision and digital poverty, and the Society is concerned that current proposals seem to be based on the assumption that in September teaching will return to normal and there will be no impact on students due to disruptions that have already taken place.

The Society welcomes the approach of permitting observation and demonstration of practical activities to reduce pressures on teaching time and acknowledging the risk of future public health restrictions. However, it is vital that this reduction in requirements is only in response to disruptions in 2020 and 2021. Ofqual and exam boards should make it clear to centres that these adjustments are currently only suggested for 2020/21, and do not represent a fundamental change in the approach to practical activity.

We encourage schools to conduct as much practical work as is safe, in line with CLEAPSS guidance, and support outdoor practical activity to ensure continued engagement with the practical aspect of our subject. We support the emphasis placed on practical skills and techniques, and accept that demonstrations or simulations may be the only way to safely engage with practical activities next year, but would not accept adjustment or reduction of practical activity in future years. Wherever possible, schools should still seek to meet the ten benchmarks set out in Gatsby's Good Practical Science report with appropriate adjustments for the ongoing public health restrictions for example, engagement with practical activities through simulation or observing demonstrations.

STEM skills are vital to the economy and climate change and biodiversity loss remain our greatest challenges. Therefore, equipping learners with practical science skills that could help them secure meaningful employment or transition to further study is essential. Young people are motivated by practical work and schools should take any opportunity they can to re-engage students after lock down and a loss of face to face teaching, and practical activities are a good route to do so while supporting and developing knowledge and understanding.

The Royal Society of Biology would urge exam boards to provide additional guidance and teaching resources to their centres, to ensure that burden on teacher planning is not increased by requiring teachers to seek out new simulation resources or create their own recorded demonstrations. If such resources are produced or signposted by exam boards, it is much more likely that all teachers and students at all centres will have a consistent experience of such simulations and demonstrations next year.

The Royal Society of Biology recommends:

- A reduction in sampled content is considered and actioned by exam boards in good time for teacher planning next year
- Optional questions or adjustments to paper formats are considered and any changes are communicated quickly to teachers and students, and that specimen papers are created where this significantly differs from usual formats
- Exam boards provide guidance and teaching resources directly to centres for any adjustments to required practical skills and techniques
- Ofqual and DfE make explicit their commitment to practical science, and its place in the curriculum even if expectations for required practical skills and techniques are reduced next year.

AS Biology

Current assessment arrangements	Proposed assessment arrangements for 2021
100% examination. Completion of practical activities covering apparatus and techniques to support questions in the exam papers	100% examination Permit observation of demonstrations / simulations of practical activities to cover required apparatus and techniques **Rationale:** To reduce pressures on teaching time and to accommodate potential on-going public health restrictions

16. To what extent do you agree or disagree with the proposed assessment arrangements for each AS and A level subject in 2021?

Strongly Agree	Agree	Neither agree nor disagree	Disagree	**Strongly disagree**

17. Do you have any comments on the proposed assessment arrangements for each GCE AS and A level subject in 2021?

Any adjustments to AS Biology should be in line with those for A level Biology, additional guidance should be provided for centres entering students to AS level courses stating that 2022 examinations will not include any exceptional arrangements, so any adjustments made as part of 2020/21 AS studies may have to be picked up in A level studies 2021/22.

The Royal Society of Biology does not wish to see current cohorts of students disadvantaged by the COVID-19 crisis, and would not suggest that adjustments made in these exceptional circumstances should be continued beyond addressing the issues for these current cohorts. The Society has an established curriculum committee, who have spent several years considering the current curriculum, adjustments that could be made in future, and the developments we would like to see in curriculum. We stand by the importance of practical skills and techniques, and the opportunity for students to experience phenomena through observation and manipulation. Engagement with practical activities improves knowledge and understanding in our subject and while every component of a GCSE or A level qualification is important, we do recognise that some flexibility in the system could be useful in these circumstances and allow knowledge, understanding and skills to be picked up and developed from a different starting point at the next phase of education, if teachers and centres are given enough guidance and time to do so.

We understand that in subsequent conversations with the Department for Education, Ofqual were instructed that no changes should be made to the

sampling of content in English, Maths and the sciences at GCSE and A level. The Royal Society of Biology was not consulted as part of these discussions.

We urge Ofqual to fully consider approaches that may be taken to mitigate against the disruption to over one fifth of teaching time in GCSE and A level, and possibly more due to national or local lockdowns, or individual student absence due to COVID-19. There appears to be no consideration of this significant drop in teaching and learning time in the consultation document. There are known and emerging inequalities emerging due to differing school provision and digital poverty, and the Society is concerned that current proposals seem to be based on the assumption that in September teaching will return to normal and there will be no impact on students due to disruptions that have already taken place.

In informal conversation with Ofqual, it has been suggested that AS and A level students are more able to undertake independent work than their GCSE counterparts. While in a normal year students may be expected to increase their independent study in the move from GCSE to A level, the current cohort of students entering Year 12 will have experienced a significant gap in learning and may not have undertaken any independent study while they await calculated grade awards for GCSEs. The incoming AS and A level cohort are likely to require more support than previous cohorts.

The Royal Society of Biology welcomes the approach of permitting observation and demonstration of practical activities to reduce pressures on teaching time and acknowledging the risk of future public health restrictions. However, it is vital that this reduction in requirements is only in response to disruptions in 2020 and 2021. We encourage schools to conduct as much practical work as is safe, in line with CLEAPSS guidance, and support outdoor practical activity to ensure continued engagement with the practical aspect of our subject. Wherever possible, schools should still seek to meet the ten benchmarks set out in Gatsby's Good Practical Science report with appropriate adjustments for the ongoing public health restrictions for example, engagement with practical activities through simulation or observing demonstrations.

STEM skills are vital to the economy and climate change and biodiversity loss remain our greatest challenges. Therefore, equipping learners with practical science skills that could help them secure meaningful employment or transition to further study is essential. Young people are motivated by practical work and schools should take any opportunity they can to re-engage students after lock down and a loss of face to face teaching, and practical activities are a good route to do so while supporting and developing knowledge and understanding.

The Royal Society of Biology would urge exam boards to provide additional guidance and teaching resources to their centres, to ensure that burden on teacher planning is not increased by requiring teachers to seek out new simulation resources or create their own recorded demonstrations. If such resources are produced or signposted by exam boards, it is much more likely that all teachers and students at all centres will have a consistent experience of such simulations and demonstrations next year.

The Royal Society of Biology recommends:

- A reduction in sampled content is considered and actioned by exam boards in good time for teacher planning next year
- Optional questions or adjustments to paper formats are considered and any changes are communicated quickly to teachers and students, and that specimen papers are created where this significantly differs from usual formats
- Exam boards provide guidance and teaching resources directly to centres for any adjustments to required practical skills and techniques
- Ofqual and DfE make explicit their commitment to practical science, and its place in the curriculum even if expectations for required practical skills and techniques are reduced next year

A Level Biology

Current assessment arrangements	Proposed assessment arrangements for 2021
100% examination. Completion of at least 12 practical activities to demonstrate competency against the Common Practical Assessment Criteria (CPAC for the separately reported Practical Endorsement)	100% examination Change the requirements for Practical Endorsement to allow assessment of the Common Practical Assessment Criteria (CPAC) across the minimum number of practical activities required to demonstrate competence. Permit exam boards to monitor centre's application of CPAC by remote means **Rationale:** To reduce pressures on teaching time and to accommodate potential on-going public health restrictions

18. To what extent do you agree or disagree with the proposed assessment arrangements for each AS and A level subject in 2021?

Strongly Agree	Agree	Neither agree nor disagree	Disagree	**Strongly disagree**

19. Do you have any comments on the proposed assessment arrangements for each GCE AS and A level subject in 2021?

The Royal Society of Biology feels an opportunity has been missed to support teachers and students through a planned reduction of sampled content in 2021 exams, and that urgent action needs to be taken by Ofqual, the exam boards, DfE to mitigate against further disadvantaging students. The Royal Society of Biology suggested this in earlier conversations with Ofqual and DfE and regrets that time has been wasted in the last 4-6 weeks which could have been utilised to provide guidance on options for reducing sampled content in 2021, informed by our own curriculum work and by facilitating discussions with our curriculum and assessment expert committee members. We feel this could be achieved without detrimental impact to the national curriculum or specifications in future years, and without undermining the importance of hands-on engagement with practical activities. We further expand on this in relation to the Secretary of State's letter and our informal conversations with Ofqual and DfE, in our answer to question 22 on the equality impact assessment.

The Royal Society of Biology does not wish to see current cohorts of students disadvantaged by the COVID-19 crisis, and would not suggest that adjustments made in these exceptional circumstances should be continued beyond addressing the issues for these current cohorts. The Society has an established curriculum

committee, who have spent several years considering the current curriculum, adjustments that could be made in future, and the developments we would like to see in curriculum. We stand by the importance of practical skills and techniques, and the opportunity for students to experience phenomena through observation and manipulation. Engagement with practical activities improves knowledge and understanding in our subject and while every component of a GCSE or A level qualification is important, we do recognise that some flexibility in the system could be useful in these circumstances and allow knowledge, understanding and skills to be picked up and developed from a different starting point at the next phase of education, if teachers and centres are given enough guidance and time to do so.

We understand that in subsequent conversations with the Department for Education, Ofqual were instructed that no changes should be made to the sampling of content in English, Maths and the sciences at GCSE and A level. The Royal Society of Biology was not consulted as part of these discussions.

We urge Ofqual to fully consider approaches that may be taken to mitigate against the disruption to over one fifth of teaching time in GCSE and A level, and possibly more due to national or local lockdowns, or individual student absence due to COVID-19. There appears to be no consideration of this significant drop in teaching and learning time in the consultation document. There are known and emerging inequalities emerging due to differing school provision and digital poverty, and the Society is concerned that current proposals seem to be based on the assumption that in September teaching will return to normal and there will be no impact on students due to disruptions that have already taken place.

In informal conversation with Ofqual, it has been suggested that AS and A level students are more able to undertake independent work than their GCSE counterparts. While in a normal year students may be expected to increase their independent study in the move from GCSE to A level, the current cohort of students entering Year 12 and 13 will have experienced a significant gap in learning and may not have undertaken any independent study while they await calculated grade awards for GCSEs. The incoming AS and A level cohort are likely to require more support than previous cohorts.

The Royal Society of Biology feels that additional guidance is required to ensure teachers and students are well prepared for the proposed adjustment to required practicals for the A level endorsement. Some centres cover 12 required practical activities and CPAC assessment across the whole two-year programme of study, and others through intensive courses. Wherever possible, students should complete all 12 activities.

It is vital that this reduction in requirements is only in response to disruptions in 2020 and 2021. Ofqual and exam boards should make it clear to centres that these adjustments are currently only suggested for 2020/21, and do not represent a fundamental change in the approach to practical activity. Students should experience much more than 12 required practicals within their two year A level studies. We encourage schools to conduct as much practical work as is safe, in line with CLEAPSS guidance, and support outdoor practical activity to ensure continued engagement with the practical aspect of our subject. Wherever possible,

schools should still seek to meet the ten benchmarks set out in Gatsby's Good Practical Science report with appropriate adjustments for the ongoing public health restrictions for example, engagement with practical activities through simulation or observing demonstrations.

STEM skills are vital to the economy and climate change and biodiversity loss remain our greatest challenges. Therefore, equipping learners with practical science skills that could help them secure meaningful employment or transition to further study is essential. Young people are motivated by practical work and schools should take any opportunity they can to re-engage students after lock down and a loss of face to face teaching, and practical activities are a good route to do so while supporting and developing knowledge and understanding.

The Society would urge exam boards to provide additional guidance and teaching resources to their centres, to ensure that burden on teacher planning is not increased by requiring teachers to seek out new simulation resources or create their own recorded demonstrations. If such resources are produced or signposted by exam boards, it is much more likely that all teachers and students at all centres will have a consistent experience of common practical assessment criteria next year.

Higher Education Institutions must be informed of any adaptations made to A level practical endorsements. The Royal Society of Biology is able to share such information through our Heads of University Biosciences and universities offering accredited undergraduate courses, but to ensure knowledge is widespread information should be disseminated through a cross-board statement to HEI admissions offices and UCAS.

The Royal Society of Biology recommends:

- A reduction in sampled content is considered and actioned by exam boards in good time for teacher planning next year
- Optional questions or adjustments to paper formats are considered and any changes are communicated quickly to teachers and students, and that specimen papers are created where this significantly differs from usual formats
- Exam boards provide guidance and teaching resources directly to centres for any adjustments to required practicals
- Higher Education Institutions are informed of any adjustments to papers, practical endorsements and timelines for awarding results.
- Ofqual and DfE make explicit their commitment to practical science, and its place in the curriculum even if expectations for required practicals are reduced next year

GCSE combined science (consultation documents page 8 – 10 + table extracted below)

Current assessment arrangements	Proposed assessment arrangements for 2021
100% examination At least 16 practical activities that cover required apparatus and techniques	100% examination Permit observation of demonstrations / simulation to cover required apparatus and techniques **Rationale:** To reduce pressures on teaching time and to accommodate potential on-going public health restrictions

20. To what extent do you agree or disagree with the proposed assessment arrangements for each GCSE subject in 2021?

Strongly Agree	Agree	Neither agree nor disagree	Disagree	**Strongly disagree**

21. Do you have any comments on the proposed assessment arrangements for each GCSE subject in 2021?

The Royal Society of Biology feels an opportunity has been missed to support teachers and students through a planned reduction of sampled content in 2021 exams, and that urgent action needs to be taken by Ofqual, the exam boards, DfE to mitigate against further disadvantaging students. The Royal Society of Biology suggested this in earlier conversations with Ofqual and DfE and regrets that time has been wasted in the last 4-6 weeks which could have been utilised to provide guidance on options for reducing sampled content in 2021, informed by our own curriculum work and by facilitating discussions with our curriculum and assessment expert committee members. We feel this could be achieved without detrimental impact to the national curriculum or specifications in future years, and without undermining the importance of hands-on engagement with practical activities. We further expand on this in relation to the Secretary of State's letter and our informal conversations with Ofqual and DfE, in our answer to question 22 on the equality impact assessment.

The Society welcomes the approach of permitting observation and demonstration of practical activities to reduce pressures on teaching time and acknowledging the risk of future public health restrictions. However, it is vital that this reduction in requirements is only in response to disruptions in 2020 and 2021. Ofqual and exam boards should make it clear to centres that these adjustments are currently only suggested for 2020/21, and do not represent a fundamental change in the approach to practical activity. We encourage schools to conduct as much practical work as is safe, in line with CLEAPSS guidance, and support outdoor practical activity to ensure continued engagement with the practical aspect of our subject.

We support the emphasis placed on practical skills and techniques, and accept that demonstrations or simulations may be the only way to safely engage with practical activities next year, but would not accept adjustment or reduction of practical activity in future years.

STEM skills are vital to the economy and climate change and biodiversity loss remain our greatest challenges. Therefore, equipping learners with practical science skills that could help them secure meaningful employment or transition to further study is essential. Young people are motivated by practical work and schools should take any opportunity they can to re-engage students after lock down and a loss of face to face teaching, and practical activities are a good route to do so while supporting and developing knowledge and understanding.

The Royal Society of Biology would urge exam boards to provide additional guidance and teaching resources to their centres, to ensure that burden on teacher planning is not increased by requiring teachers to seek out new simulation resources or create their own recorded demonstrations.

The Royal Society of Biology recommends:

- A reduction in sampled content is considered and actioned by exam boards in good time for teacher planning next year
- Optional questions or adjustments to paper formats are considered and any changes are communicated quickly to teachers and students, and that specimen papers are created where this significantly differs from usual formats
- Exam boards provide guidance and teaching resources directly to centres for any adjustments to required practical skills and techniques
- Ofqual and DfE make explicit their commitment to practical science, and its place in the curriculum even if expectations for required practicals are reduced
- Ofqual and DfE make explicit their commitment to practical science, and its place in the curriculum even if expectations for required practical skills and techniques are reduced next year.

Equality impact assessment (consultation pages 44 – 45)

22. Are there other potential equality impacts that we have not explored? What are they?

The Royal Society of Biology feels Ofqual's proposals for the sciences, and indeed across all subjects, do not go far enough in addressing the huge change in student experience and possible time remaining for quality teaching and learning. Our answers to previous questions in this response details our position on optionality, number and length of exams, reduction of examinable content and view of the current proposals for the sciences.

The Society understands that some are concerned the standard of GCSEs or A levels may drop if sampled content is reduced for exams in 2021. We argue that the standard of these qualifications comes from the depth of learning and the level of individual questions in examination papers, not the breadth of content sampled in the exam.

Without question, students sitting exams in 2020/21 will have experienced reduced teaching and learning time. With the current specifications in the sciences, it is highly unlikely any schools have spare teaching time in their GCSE / A level programme of study. We are concerned then that the increased pressures on remaining teaching and learning time in 2020/21 will lead to a decrease in quality and depth of learning, and loss of the aspirational elements of our subject. We feel a sensible way to address this is to reduce sampled content and work with sixth form centres, HEIs and others who use the qualifications to ensure that any adjustments are acknowledged and accounted for in further progression.

The Royal Society of Biology's position is that either sampled content should be reduced in 2020/21 to account for disruptions, or a significant statistical approach should be taken after exams are sat, to mitigate against disadvantage. In either case, the possibility of ongoing disruptions in 2020/21 must be taken into account, and a longer term 3-5 year plan considering the impact of these disruptions on progression through education must be developed. We do not see this as lowering the bar for the current cohort, we see it as changing the parameters to reflect the unprecedented situation in our education system.

In the sciences, there is already precedent for sampling across a narrower range of content whilst maintaining the depth and standard of the qualification – the Combined Science GCSE is not intended to be less rigorous than the single Biology, Chemistry and Physics GCSEs (or triple science route), the Combined Science GCSE was designed just to include a narrower selection of content.

The letter from the Secretary of State on examinations in 2021 states that content should not be changed if it forms the foundation for the qualifications and that each element of content is important and to change the scope of content for one year would send the wrong signals for subsequent years.

We are in total agreement that changing content, or facing teachers with a short timescale curriculum review would not be appropriate for the progression of our

students. However, we would argue that recognising the issues students have faced this year, giving advanced warning of a change to sampled content (not the content itself) would be an appropriate mechanism to address these issues in exceptional circumstances, that would still allow teachers and students to cover the breadth of the curriculum, while creating space and certainty for students in what areas they should focus on in the limited amount of time left in their studies.

The Royal Society of Biology feels an opportunity has been missed to support teachers and students through a planned reduction of sampled content in 2021 exams, and that urgent action needs to be taken by Ofqual, the exam boards, DfE to mitigate against further disadvantaging students. The Royal Society of Biology suggested this in earlier conversations with Ofqual and DfE and regrets that time has been wasted in the last 4-6 weeks which could have been utilised to provide guidance on options for reducing sampled content in 2021, informed by our own curriculum work and by facilitating discussions with our curriculum and assessment expert committee members. We feel this could be achieved without detrimental impact to the national curriculum or specifications in future years, and without undermining the importance of hands-on engagement with practical activities.

The Royal Society of Biology also recognises that exam boards have already finalised papers for 2021, and generally do so 18 – 24 months before the examinations are due to be sat, and that designing papers involves a variety of complex processes to ensure content is sampled at appropriate levels for attainment and that adapting an exam paper would not be as easy as removing a given number of questions. This could be a compelling reason for exam boards to oppose any changes to the examination process next year, however, we would urge Ofqual to consider this carefully in a situation where subject organisations are willing to engage on reducing examinable content in 2020/21.

The equality impact assessment on page 44 of the consultation document identifies a number of student groups that may have been most affected by disruption to face-to-face teaching and learning. While the planned measures to make up for missed education may reach some of these groups, it might not identify all and does not guarantee engagement with the proposals to narrow the attainment gap in these groups. It must be acknowledged that some individual students will have faced much more disruption than their peers due to socio-economic status, illness, bereavement, impact of parent or carer job loss due to the pandemic, accommodation instability, the digital divide, staff shortages at centres, and ongoing possibility of local lockdowns and the need to self-isolate.

Students who have not had easy access to IT and internet at home without question have been disproportionately affected by partial school closures. Ahead of this consultation, the Society stated in informal discussions and as part of our submission to the Education Select Committee in June that we would be happy to consider with exam boards appropriate approaches to reducing the content on which students would be examined in 2021. We did so recognising the challenges of topics taught in different order in different schools, or even between classes in the same school, and sought to tackle those challenges through input

from our curriculum committee, teacher and HE members, as well as in consultation with our higher education institution members.

Ofqual or JCQ may need to estimate the probability of many more students applying for special consideration under the current guidelines e.g. death of a family member, severe disease, traumatic experience or domestic crisis. It is noted that some exam boards apply a cut off of three months before assessment, however in the current circumstances a longer timeframe may be more appropriate.

The Wellcome Trust's Science Education Tracker 2017 found that here is huge variation in the amount of practical science that is done in schools, with the poorest pupils from deprived areas missing out. There is also insight into the role of families with a Family Science Connection Index (FSCI) used to measure, for example, visiting science-related attractions or having high science attainment within the family. Learners in families with a low FSCI are at a disadvantage when it comes to studying science, this has only been further exacerbated during lockdown.

There is significant evidence that any break in learning experienced by students from disadvantaged backgrounds leads to a disproportionate impact on those students. This will certainly be true for the disruptions in 2020 and perhaps into 2021. For some learners, an A-level field course will be their only opportunity to be involved in such ecological fieldwork throughout their whole formal science education, from 5-18 years. Disadvantaged learners may not have the same opportunities as their peers to experience high quality green or blue spaces or even have easy access to nature. Lack of travel opportunities or inability to join in extracurricular activities such as after school clubs also add to the lack of opportunities to engage with science.

We are concerned that students may not re-engage fully with their science studies after such significant disruption, and if studying for a GCSE and A level qualification in the sciences is made even more challenging due to the vast quantity of content to be covered in a shorten timescale, there is a risk that progression in the sciences will drop for these cohorts.

23. We would welcome your views on how any potential negative impacts on particular groups of students could be mitigated.

We also recognise that the current situation and proposals, do not take into account the disadvantage already present in the system due to the difference in provision available to students in independent and state schools. Some state schools have been able to provide a huge amount of online learning support, with live lessons and direct individual feedback, and even remote assessments with invigilation. This is in stark contrast with the variability in state school provision during partial school closures since March. We therefore question whether avoiding a reduction in sampled content, or adding optionality in question papers, truly does avoid advantaging students whose education has been less disrupted than that as others. Page 45 of the consultation document further states that "changes to exams and assessments cannot address the differential impact on students of the disruption".

The Royal Society of Biology disagrees that changing exams and assessments cannot address the impact of the disruptions. Many students will not have covered the full syllabus and by insisting that they study as if 100% of the specification may be sampled, we are expecting some students and teachers to squeeze approximately one fifth of teaching and learning into a normal school year (if, indeed, schooling does return to normal in September). This does not seem an equitable approach, and certainly leads to further disadvantage for those students. We would argue that a planned approach to reducing sampled content next year would benefit those students more than the risk of introducing disadvantage compared with a peer who has revised for 100% of the content to be sampled.

We suggest that Ofqual and the exam boards consider the likelihood of the increased need for special consideration next year, and how this can be managed most appropriately for students and families that may not be experienced in navigating the exam system, or may not have the language skills needed to do so.

The Royal Society of Biology would urge exam boards to provide additional guidance and teaching resources to their centres, to ensure that burden on teacher planning is not increased by requiring teachers to seek out new simulation resources or create their own recorded demonstrations.

Regulatory impact assessment (consultation pages 45 – 46)

24. Are there additional activities associated with changing the exam and assessment arrangements for students taking the qualifications in summer 2021 that we have not identified above? What are they?

The Royal Society of Biology advises that centres must receive clear information in relation to practical endorsements and practical requirement adjustments in good time before September, including teaching resources to help teachers plan for fewer practicals to cover all CPAC.

Expecting teachers to seek out quality resources for demonstration and simulation of required apparatus techniques that are appropriate for engagement from a wide range of students will increase burden next year, and exam boards should sign post existing resources, or use the summer to develop new resources to support teachers.

25. What additional costs do you expect you would incur if the proposed changes to the exam and assessment arrangements were introduced for summer 2021?

On page 45 it is suggested that subject associations could make freely available resources to assist teachers in using simulations or demonstrations to observe practical skills and techniques, or to support a reduced number of practical activities to cover all CPAC.

The Royal Society of Biology is surprised that subject associations were not approached to discuss this ahead of consultation publication. The Royal Society of Biology is unable to produce such resources but would be happy to facilitate conversations between Ofqual / exam boards / DfE and our member organisations that may already have such resources and be able to make them freely available if they are not already free to access. For example, the Field Studies Councils has launched an Outreach and Digital programme specifically designed to support teachers and students over the next year, tailored for all awarding organisations at 4 levels – digital, advanced digital, blended and outreach.

The RSB's head of education policy previously sat on the advisory board for the Practical Assessment in School Science (PASS), a three-year University of York and Kings College research programme funded by the Wellcome Trust, and encourages Ofqual, exam boards and DfE to engage with the PASS project team as we are aware of preliminary findings regarding the use of teacher demonstrations as a means of preparing candidate to answer practical questions in GCSE examinations. The Principal Investigator, Professor Judith Bennett at University of York, would be able to discuss findings with the science leads at Ofqual and exam boards to inform the implementation of these proposals.

The Society advises that exam boards would be the best route for sign posting and disseminating these resources, as they have direct links to every centre.

26. We would welcome your views on any suggestions for alternative approaches that could reduce burden and costs.

Individual teacher members and member organisations of the Royal Society of Biology would be happy to share their teaching resources, if the exam boards can provide a platform through which to do so. The Royal Society of Biology is unable to collate and host such a platform, but would be happy to share information from exam boards and direct teachers and centres to appropriate resources. Any such resource collection must be carefully tagged, each simulation or resource verified by the exam boards as an acceptable alternative for the required practical skills and techniques, or as an alternative to a required practical in A level, and disseminated by the exam boards directly to centres. Any resource collection that requires teachers to sift through untagged resources without clear quality assurance will lead to additional burden for teachers.

The Royal Society of Biology feels it is important to acknowledge that students sitting exams in 2021 have faced significant disruption to over one fifth of normal face to face teaching in their two-year programme. If that is not possible through increased optionality or a reduction in sampled content, Ofqual and exam boards must consider whether a tariff, drawing on processes of special consideration in any normal year, could be an appropriate mechanism to address disadvantage faced by students who will not have covered content in the same depth and may not have secure knowledge of 100% of the content.

Special consideration is designed to cover students whose exam performance is affected by temporary illness, injury or unforeseen incident, and guidance is in place for 1 – 5% tariffs in the JCQ guidelines on special consideration. Given the unprecedented reduction in teaching time, such tariffs may need to be increased. We understand that exceptional circumstances in the past have led to a local application of special consideration, and would encourage Ofqual, exam boards and JCQ to make explicit to centres, their teachers and students, how such a processes may be used in 2020/21. Awarding organisations may be able to use statistical modelling to establish an appropriate tariff after exams are complete in 2021.

The Royal Society of Biology would like to know if Ofqual have considered a centre wide or even individual class tariff that could be informed by teachers based on the disruptions in their locality e.g. local lockdown, whole school closures due to test and trace, provision and engagement with remote teaching and learning during partial closures in 2019/20; the use of calculated grades in 2021; or other statistical approaches to adjust grades after exams have been sat in 2021.