The Royal Society of Chemistry's response to the Advanced British Standard (ABS) consultation

March 2024

In October 2023 the Conservative Government announced their proposals for 16-19 reform in England in the form of the Advanced British Standard, a new Baccalaureate-style qualification framework for 16-19 year-olds. The consultation sought views on the policy proposals underpinning the new qualification, with the feedback intended to help develop the approach to the ABS and how it is delivered.

Unanswered questions are omitted for clarity.

Chapter 1

This chapter sets out the case for change for reforming 16-19 education in England by introducing the Advanced British Standard. It invites views on how to shape the aims of this reform and the purposes of the ABS to deliver the outcomes we want for students and the economy.

11. We propose several overarching aims and principles that should underpin the introduction and design of the Advanced British Standard. To what extent do you support these proposed aims and principles? If you have further views on this, please share below.

Somewhat support

We broadly agree with the stated aims of the reform, although perhaps additional thought needs to be put into narrowing the disadvantage gap, as it will likely take more than increasing teaching hours as proposed.

We caution against simplifying the qualification landscape to the point that risks increasing inequity (e.g. exemplified by the removal of applied science qualifications, which are disproportionately taken by students from less advantaged backgrounds).

Educators in different settings (school, FE, HE), along with employers, are generally supportive of a broader education. They believe it is beneficial for personal development, and it reflects the multidisciplinary nature of many subjects, including the sciences.

We understand the reasoning behind increased contact hours, something employers we have spoken to are encouraged by, but the potential effects on the teaching workforce must be considered (see our answer to question 44).

Teachers we have spoken to have questioned the novelty of this reform, comparing it to both the A-level/AS-level model, and the International Baccalaureate. Teachers have also voiced concerns over minors potentially stopping student progression i.e. not pursuing a subject to major level acting as a barrier to further study or employment.

12. What do you think is the most important thing that the Advanced British Standard could achieve?

There are a number of things that the ABS could and should aim to achieve.

The ABS needs to deliver a curriculum that is contextual and relevant to students' lives.

To be most effective, the pre-16 and post-19 landscape should be considered in conjunction with the ABS. Progression between phases must be planned so that each stage of education builds on what has come before, whether learners follow the occupational or more academic route.

Employers need to understand and have confidence in the grades that a young person gains as part of this qualification, and (initially) how they compare to the system this qualification will supersede. There must be comparability of grades between different subjects.

Any institutions that may take on a student who holds the new qualification (employers, HE etc) need to be well informed and consulted in this reform process. These institutions will need to know what these young people are able to do and the knowledge they should possess.

The ABS needs to target a genuine parity of esteem between academic and vocational routes. We feel this is at risk through having 'ABS' and 'ABS Occupational' titles for each route, as using separate language delineates the qualifications and naturally separates them. There needs to also be proper student choice for each pathway through equity of access at their post-16 provider.

Chapter 2 - Section 1

This chapter makes proposals and invites views on how to design the structure and content of the Advanced British Standard. Section 1 focuses on the Advanced British Standard programmes that students will study and what these will look like.

14. We propose two main programmes at Level 3: Advanced British Standard and Advanced British Standard (occupational). Each will contain a range of separate components to support students. To what extent do you support the proposed design for the Level 3 Advanced British Standard programmes? If you have further views on this, please share below.

Somewhat oppose

In principle we welcome the proposal to include some form of maths and English for all students to 18. Maths is important for chemists as is written communication – the challenge will be making the offering useful for a range of subject combinations.

We are concerned that the perceived lack of parity between current technical and academic routes will remain if the two ABS programmes are given different names. Having the word 'occupational' in brackets but not having a similar bracketed description for the 'academic' route unnecessarily highlights their differences. We recommend that both Level 3 ABS routes have the same name, the combination of options taken will make it clear which route a candidate is following.

Efforts to create parity between academic and vocational options are welcome – to achieve that, there must be proper student choice through equity of access at their post-16 provider. Based on the difficulties some providers have had securing T-level placements, ensuring that there are enough appropriate industry placements in the right places will be a challenge. For example, a provider in an isolated coastal region reliant on tourism may find it hard to provide student placements in science companies. A centrally organised placement system as well as incentives for industry placement providers should be investigated to avoid the ABS (occupational) route facing the same challenges that T-level providers have told us about.

Chapter 2 - Section 2

This chapter makes proposals and invites views on how to design the structure and content of the Advanced British Standard. Section 2 focuses on the design of the component parts of the Advanced British Standard: majors; minors; employability, enrichment and pastoral (EEP) activities; and industry placements.

21. Once rolled out, we anticipate that the Advanced British Standard qualification framework will supersede the varied Level 3 qualification landscape for 16–19 year-olds (including A levels and T Levels etc.). If you have further views on this, please share below.

We believe that completely replacing the existing Level 3 vocational qualification landscape with the ABS risks a reduction in overall participation and increased inequity in participation in sciences at Level 3 and above.

We have previously welcomed the introduction of T-levels as a progression route directly into specialised occupations such as laboratory technician and wished to see them succeed. However, the success of T-levels in supporting progression into higher education, higher apprenticeships and technical training, and the workplace is still unknown. There continue to be concerns around difficulties in accessing placements, and the difficulty of the courses themselves. Many universities are still unclear on whether they would accept the qualification for admission. We are concerned that these issues won't be addressed before the rollout of the ABS, and they will persist in the new qualification.

Applied science qualifications are disproportionately taken by students from less advantaged backgrounds. Before the recent landscape changes these qualifications were achieved by around 25,000 students each year; a level of participation the new T-levels are currently nowhere near meeting. We continue to be concerned that removing funding from applied science qualifications will worsen equity, diversity and inclusion in our sector; undergraduate chemistry students already tend to be from more advantaged social backgrounds than the wider student population.

25. To what extent do you support the proposal for increased teaching time relative to self-directed study? We particularly welcome any evidence of how this is balanced currently.

Somewhat support

Teachers and HE providers we consulted mostly welcomed the idea of increased teaching time. They felt that students, particularly those from disadvantaged backgrounds, would benefit from the additional support. However, the plan to increase teaching time to replace independent study for each subject only works if there is less subject content in the time allocated to allow students to consolidate knowledge with the support of a teacher.

The proposal says that a major will cover 90% of the content of an A-level in 300-350 GLH. This compares with 360 GLH traditionally associated with an A-level. For each major to have extra teaching time to consolidate learning (rather than cover new content), it would need to have more than 324 GLH.

Teachers we spoke to are concerned about how this increase in teaching time would be implemented amid longstanding teacher shortages. Our Science Teacher Survey 2023 found that 36% of mainstream state secondary schools were understaffed for chemistry teachers.

Chemistry HE providers have also raised concerns around the decrease in self-directed study negatively impacting the development of independent study skills that are essential for undergraduate study.

We recommend that the current teacher recruitment and retention issues are urgently addressed, as the proposal to increase teaching time could further exacerbate this issue. We also recommend that young people are given the space to develop their independent study skills within the ABS.

27. If you have views or evidence on how time for employability, enrichment and pastoral (EEP) can best be used, please share below. We particularly welcome views and evidence about how to support students with additional challenges, e.g. lower prior attainment or the most disadvantaged.

We welcome the inclusion of time for EEP as a part of the ABS. Teachers we consulted agreed that a well-run EEP programme would be a positive addition to the ABS. They felt that this was an opportunity to develop a broader range of knowledge and skills which were separate from academic studies. They also recommended that students should be given a recognition certificate to celebrate their achievements on the EEP programme. However, it is important to note that teachers were opposed to this component being assessed through traditional written examinations.

28. If you have views on how we can encourage employers to offer industry placements and what further support education providers will require, please share below.

Employers have told us that they would welcome financial packages to support taking on these shorter-term placements. Without support or incentive, employers feel that there is limited benefit in taking on students as by the time they are trained on a task, their placement is finished.

We suggest sector specific guidance for employers, so that they understand exactly what a learner is able to, and could do, in their placement. This would ensure employers plan appropriate work and training for that learner, that the learner's time is not wasted, and the employer sees benefits in taking on these placements.

We also suggest that the government investigate the viability of a government-run, centralised match-making service facilitate employers and learners finding worthwhile pairings. This would ease the burden for providers on trying to source a placement in the local area and enable learners to better see the varied opportunities available to them.

Chapter 2 - Section 3

This chapter makes proposals and invites views on how to design the structure and content of the Advanced British Standard. Section 3 focuses on how best to support students to develop maths and English knowledge and skills to thrive in life and work.

31. We propose that there will be a range of English and maths majors and minors at Levels 3. To what extent do you support this proposal?

Somewhat support

35. If you have further views on what students will study as part of the Advanced British Standard, or anything else covered in Chapter 2, please share below.

We agree that English and maths skills are important for future study and employment; and maths could support students with their studies of STEM subjects.

When discussing compulsory maths minors, teachers and HE providers we spoke to felt that it was important to contextualise the qualification content. One way to do this is to ensure that the maths they are studying is relevant to other subjects that students are taking (e.g. chemistry).

We appreciate that this is difficult to achieve, and more consideration is needed on how the maths minors could complement a wide range of different subject combinations.

Chapter 3

This chapter seeks initial views on the assessment, grading and awarding principles that should inform further development of the Advanced British Standard. There will be subsequent technical questions that we are continuing to work through with Ofqual. Ofqual will then consult on detailed assessment arrangements in due course.

36. We have proposed assessment principles to underpin the Advanced British Standard. To what extent do you support these assessment principles? If you have further views on this, please share below.

Somewhat oppose

Please limit your response to 1500 characters or less

Assessment of any aspect of the curriculum must be designed to validly measure learners' abilities. It should be tailored to the setting in which the curriculum is delivered and likely progression routes, e.g. academic or technical. Therefore, we cannot fully support the proposal that a *single* set of design and assessment criteria for *all* level 3 components is appropriate.

The assessment of theoretical concepts should focus on allowing learners to demonstrate their understanding of and ability to apply concepts, including to unfamiliar contexts. Assessment should not focus on rote memorisation. (We accept that recall of core knowledge is important in developing fluency in expressing understanding and may therefore feature in assessment).

We do not believe that all assessment should primarily be by exam. Any programme of assessment should assess across *all* the components of a chemistry curriculum, including practical work and appreciation of the impacts of chemistry on society. We recommend a combination of a broad range assessment types to cover different competences, cater for diverse learners, and minimise the effect of any negative impacts associated with particular tasks.

While the grading in many qualifications is designed to differentiate between candidates, some aspects of the curriculum may be better assessed through 'can-do' or competence-based tasks that all or most learners can achieve. E.g. demonstration of competence in certain practical skills.

38. To what extent do you support the proposal that students will receive individual grades/marks for each major and minor (or equivalents) studied within the Advanced British Standard?

Fully support

39. Do you agree that students should receive some type of overall Advanced British Standard award? If yes, what value could an 'ABS award' add on top of individual component grades, particularly for higher education providers and/or employers?

No

The Royal Society of Chemistry supports students receiving individual grades for each subject that they take. Teachers and HE providers we interviewed were strongly against having an overall 'ABS award' and raised concerns around a grade from one 'major' or 'minor' pulling down the overall grade. HE providers we consulted did not see a significant value in giving students some type of overall ABS award.

Chapter 4

This chapter seeks views on the implications of the Advanced British Standard for 16-19 education providers and workforce to ensure we can put the right support in place for the sector and maximise the breadth of offer available to students.

43. What strengths in the current approach to 16-19 education should we aim to preserve under the Advanced British Standard?

HE providers have told us that the practical endorsement aspect of A-level chemistry has been good for fostering practical skills in students starting undergraduate courses. ABS chemistry majors and minors must include development of practical skills.

A strength of the existing A-level system is that it is well understood by HE providers and employers. The ABS will need to be clearly explained to stakeholders, especially employers so that they can adapt to the new system without disadvantaging the early cohorts of ABS students.

44. What opportunities and challenges do you see for the recruitment, retention and deployment of staff as a result of implementing the Advanced British Standard?

Although it's hard to predict exactly how the ABS will affect students' subject choice, we assume that many providers will need to make more chemistry teacher hours available. Others may cope with extra demand by increasing class sizes or having joint classes for students preparing for chemistry major and minor qualifications.

As chemistry teacher recruitment targets have been missed for several years, it's hard to see how the new bonus scheme will both solve the current crisis and provide enough extra teachers to cover the ABS. We are concerned that the increased need for subject experts in the sciences at KS5 could negatively affect teacher deployment at KS4 as schools with sixth forms, may decide to allocate their expert chemistry teachers to ABS classes leaving teachers with insufficient subject expertise teaching younger students. An entitlement to high-quality, subject-specific professional development (including opportunities to help teachers with a background in one science discipline, gain the expertise needed to teach another) could help limit this problem.

If schools resort to increasing class sizes or combine teaching of major and minor qualifications within the same class, teacher workload is likely to increase. This in turn could negatively impact teacher retention. Our Science Teaching Surveys in 2022 and 2023 both found that high workload and lack of work/life balance were key reasons teachers cited for considering leaving.

45. What staff training do you think may be required to implement the Advanced British Standard successfully?

From a chemistry perspective, the ABS proposal as they stand, look very similar to the existing A- and AS-level chemistry offerings. But, as with any change in curriculum, qualifications or assessment it is important that teachers are involved with development and receive appropriate training to help them deliver the new system before it is rolled out.

If, as we suspect, the introduction of the ABS results in an increase in the number of chemistry teaching hours needed at KS5, then additional training may be required to enable teachers of students in KS4 to deepen their expertise in an additional science discipline (see our answer to Q 44).

46. We are interested in the changes that may need to be made to deliver the Advanced British Standard for all students, regardless of where they live. What changes do you think may be required in the following areas:

a. Buildings/estates?

Teachers have told us that the increased number of teaching hours and mix of majors and minors could cause timetabling issues. Chemistry lessons should ideally be assigned to laboratories rather than standard classrooms, this could be challenging for providers where the available laboratory space is already fully utilised.

c. Provider landscape?

Applied science qualifications are disproportionately taken by students from less advantaged backgrounds. Before the recent landscape changes these qualifications were achieved by around 25,000 students each year; a level of participation the new T-levels are currently nowhere near meeting. As an example, there is only one provider of the science T-level within a 24-mile radius of Cambridge, despite the city being a leading hub in the UK for life sciences. There also continues to be concerns around difficulties in accessing industrial placements.

47. If you have further views on how the Advanced British Standard could impact 16-19 providers, or anything else covered in Chapter 4, please share below.

We suspect that requirement to take five subjects with mixtures of majors and minors will increase the number of students studying some form of science qualification age 16 to 19. This is turn could put additional pressure on the school science technician workforce. Our report *The science technician workforce in English secondary schools*, found that the average number of full-time equivalent science technicians per school fell by 16% between 2011 and 2019. More recently, 37% of respondents to our *Science teaching survey 2023* reported that their school was understaffed when it came to science technicians. To ensure that enough support is in place to deliver the practical learning needed for ABS qualifications in the sciences, Government should review science technician pay and conditions, considering what policy measures might help to attract and retain science technicians in the future.

Chapter 5

This chapter seeks views on the implications of Advanced British Standard reforms for students and wider groups, and how we can maximise benefits and mitigate any risks.

48. What changes to pre-16 education do you think will be needed to create effective pathways into the Advanced British Standard?

A single science route for the majority of learners to age 16 would be the most effective pathway into the ABS.

Current GCSE science options require learners to make a choice about their futures at age13. This choice is not always their own - some schools decide which qualifications are offered to which learners. Recent research has highlighted this ‘Educational gatekeeping’, finding that only 22% of learners from the least advantaged backgrounds studied separate science, compared to 71% of learners from the most advantaged backgrounds.

This routing risks creating a two-tier system where learners associate those who are ‘good at science’ doing the separate science route, and those who are ‘not clever’ or ‘bad at science’ completing the combined science route. This **perception** of qualification ‘difficulty’ can limit a learner’s confidence, and consequently limit what they see as their options for progression.

Both science routes contain a lot of shared content. The additional content in separate sciences adds breadth rather than taking learners to a higher level. However, many schools that offer triple science teach it on a compressed allocation of lesson time resulting in the course being more challenging.

With a single route, all learners will have the opportunity to explore the sciences and to see if further study is for them. It should ensure all learners studying ABS science subjects are starting from the same strong foundations

49. If you have views on how students can be supported to make informed choices for their Advanced British Standard programme or apprenticeship – linking to their prior attainment, abilities, interests and future ambitions – please share below.

It is important for young people have links with employers and sound careers advice during their education. Careers advice and information about the range of courses and qualifications available should start early; helping more students realise that there are a range of paths that they can take.

Within our 'Chemistry for All' study, we found that to increase the number of students who continue with chemistry post-16, and increase the numbers from underrepresented groups, it is essential that:

a. The perception that chemistry is a difficult subject only suitable for 'naturally clever' students is challenged within schools;

b. a diverse range of people (gender, ethnicity, social background, age, etc.) are portrayed as contributing to chemistry and working in it and with it;

c. partnerships between schools and organisations that can complement what schools do for students' learning and engagement with chemistry are facilitated;

We recommend that there should be sufficient professional development for teachers on careers education as a part of the reforms. Our 'Science Teacher Survey 2023' found that only 44% of teachers in mainstream state secondary schools felt confident in providing information on technical and vocational routes into scientific careers.

50. If you have views or evidence on the additional support that may be needed to enable students with SEND to access the Advanced British Standard, please share below.

Teachers have told us that flexibility access is important to account for students' different and/or changing needs. For example, within the current system, if a student is struggling to complete three A-levels, they are often able to drop down to two. The ABS needs to be flexible so that if a student is unable to complete the whole ABS or ABS (occupational) programme, they can still gain valuable qualifications.

Our answer to question 36 outlines our concerns about the proposals for assessment. In addition, teachers we spoke to were worried that exam assessment of the ABS (occupational) would make this route less accessible for some students with SEND.

51. If you have views or evidence on the additional support that may be needed to enable other groups of students to access the Advanced British Standard, please share them below. Examples of these groups include disadvantaged students and students with caring responsibilities.

Whilst we acknowledge the benefit of increased guided learning hours, particularly for students from disadvantaged backgrounds, FE providers told us that some of their students need to take on part-time work alongside their studies. Flexibility around this may be needed to make the ABS accessible for such students.

52. If you have views on how to ensure the Advanced British Standard provides effective pathways into post-18 education or study, please share below.

To provide effective pathways to post-18 education and study, there needs to be effort to ensure that ABS provides parity of esteem between technical and academic routes. However, naming the qualification routes ABS and ABS (occupational) automatically introduces disparity.

Clear careers guidance will be needed to ensure that students choose combination of courses that are right for them and don't inadvertently limit their future options. For example, HE providers might require a major rather than a minor for entry onto certain courses. And double occupational specialisms may not be accepted by some HE providers.

We also recommend that connections are developed between educational institutions offering the ABS and universities. This would provide opportunities for students to explore post-18 education.

53. If you have views on how to ensure the Advanced British Standard reforms meet the needs of employers, please share below.

When implementing the ABS reforms, it is crucial that a representative sample of employers are consulted, particularly employers that might offer placements for the ABS (occupational) programme, and those who hire school leavers. Employers should have a say on the skills and knowledge requirements for students, so that young people are sufficiently equipped to enter the workforce.

It is also essential that students are given clear career guidance. This should help inform ABS subject choices and make students aware of the vocational and academic pathways available to them after completing the ABS.

We advise that there is a strong consideration of whether industry placements will be feasible as a part of the ABS (occupational) route, making sure that the challenges from the T-level placements are considered. We are aware that there has been difficulty finding placements for young people taking the T-level courses.

Connections should be developed between educational institutions offering the ABS and employers. This would provide opportunities for young people to explore career pathways available to them.

