

The Institute of Physics' Response to the Advanced British Standard Consultation

The Institute of Physics' Response to the Advanced British Standard Consultation

To: ABS.consultation@education.gov.uk

Subject: **The Institute of Physics' Response to the Advanced British Standard Consultation.**

The Institute of Physics (IOP) is the learned society and professional body for physics in the United Kingdom and Ireland. We have more than 21,000 IOP members, ranging from undergraduates to globally recognised specialists who work in a variety of sectors across the UK and Ireland. It is our mission to help physics deliver for everyday lives, our society, and our planet. This extends to advocacy for high quality physics education that is accessible to all students irrespective of location, socio-economic background, gender, ethnicity and more. We are therefore able to offer significant insight on education reform. Given the word limit on the online questionnaire, we are providing our answers in the document below and we have limited our answers to those questions to which we can respond most helpfully. We have copied in the questions and retained the original question numbers for reference. Our response has been informed by consulting with those who work in the physics education sector. We have surveyed and consulted with physics teachers, physics department heads at UK universities, as well as those providing technical education routes. Where appropriate we have shared the responses we received to this work in our answers below.

Question 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?" (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know)

The IOP is somewhat supportive of the aims and principles outlined in the proposal. There is currently strong support for reform in both the secondary and higher education communities, making now a good time to consider fundamental reform of education. We are particularly pleased to see that the proposed reform will aim to do the following:

- Raise the standard of maths and English for all 19-year-old schools leavers

- Achieve parity of esteem for academic and occupational routes under a single framework
- Narrow the disadvantage gap
- Simplify the qualifications landscape
- Increase the breadth of study for a 16- to 19-year-old

We welcome the proposal's intention to develop a greater breadth of skills and capability, such as in numeracy, digital and technical skills, as well as the opportunity for meaningful work experience placements.

We also welcome the intention for this to be a major review over a ten-year timescale. It is the IOP's position that increasing the breadth of study during 16 to 19 education positions the UK well internationally and will provide young people more and better-informed choice going into employment or further study. This in turn is likely to allow young people to find a route that suits them and should reduce changes and dropout in higher education.

As part of our work in responding to this consultation, the IOP consulted with some of its members in both secondary and higher education on the need for reform. Amongst those surveyed in secondary education, over 55% were in favour of greater breadth, and over 65% viewed the addition of maths, as a requirement, as a positive for physics education.

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

As well as somewhat supporting the proposed aims of the Advanced British Standard (ABS), there are other aims that we believe the reform should include:

- Contribute to the improvement of teacher recruitment, retention and retraining
- Engender more coherence between subjects studied by 16–19-year-olds, so that the whole is more than the sum of the parts
- Expedite an improvement in equity and inclusion within subjects. Currently, there are imbalances in representation of different groups across subjects – most obviously by gender, with girls being under-represented in maths, physics and computing and boys being under-represented in drama, history and MFL
- Improve comparability between grading outcomes in different subjects. In the current system, maths and science students are typically graded more harshly, meaning the average grade for these subjects is lower than in others

- Improve the ability of students to make more informed choices at both 16 and 18
- Ensure that 19-year-olds are better prepared for further study or employment
- Increase the number of students following high quality technical routes and progressing into technical occupations

Currently our view is that the ABS proposal is more like an evolution of the existing system rather than the major and fundamental reform that would be required to realise the above aims. We would strongly encourage incorporating the above aims into the proposal and discussions about increasing the scope, ambition and changes within these reforms.

Question 13. If you have further views on the aims, principles and purposes of the Advanced British Standard, or anything else covered in Chapter 1, please share below.

There are two further views regarding Chapter 1 of the consultation that we wish to share: the need for parity of esteem between routes and the scope of reform.

It is essential that the new qualification provides parity of esteem between academic and technical routes. However, the fact that the academic route is to be called the “Advanced British Standard” and the technical route is proposed as the “Advanced British Standard (occupational)” immediately introduces a disparity. The difference in the method of naming suggests that the academic route is the default choice and the occupational route is an alternative, second choice. We suggest that the routes should be named in a symmetrical way.

However, parity of esteem cannot be achieved solely by reforming 16 to 19 education. There needs to be major reform of both the National Curriculum prior to 16 and the assessment schemes at 16.

Under the existing system, exams at 16 assess a very narrow range of capabilities and act as a filter for choices of further study. Those who succeed in those exams are allowed onto academic courses – predominantly A-levels - whilst those who do not perform to the required entry standard are guided towards other, often technical, qualifications. In other words, following a technical route is based more on low attainment in the available academic assessment at 16 than it is on genuine choice.

Continuing with a narrow form of assessment at 16 with choices being limited, rather than expanded, by performance in those assessments will maintain the sense that technical routes are the destination for students with lower prior attainment.

Under the current proposals, the new qualification will sit between the existing landscape of education up to 16 and the education and employment landscape after 18. In other words, the jigsaw piece (of the ABS) has to fit into the same space in the puzzle. As such, the scope for innovative and fundamental reform is limited and, as has happened here, the outcome is only a minor evolution of the existing system.

Furthermore, the design of this qualification has been carried out without fully defining what is required and answering the question, that is raised in the document, of what is meant by the “right breadth and depth of knowledge and skills by age 19”. There needs to first be a discussion about what constitutes the right depth and breadth of knowledge before trying to design a solution. What is it that will serve students best? And what will serve the nation and its economy best?

In other words, the solution has been produced without a consensus about what education is trying to achieve, and the reforms look piecemeal and untethered. As things stand, they may achieve little more than making English and maths compulsory until students are 18.

Given that this is proposed as a decade-long reform, limiting the changes to a gradual evolution within one phase of education, 16 to 18, would in the opinion of the IOP be regrettably unambitious. We recommend extending the scope of reform to include:

- A fundamental review of the purpose of education across all phases
- Major reform of the national curriculum to 16
- Establishment of long-term mechanisms and structures to bring expertise and stability to curriculum and its reform
- A fundamental rethink of the purposes and methods of assessment at 16 and 18 that enables the measuring of capabilities beyond factual recall. For example, but not limited to, lab work, advanced problem solving, and teamwork

Question 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? (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know)

We are somewhat opposed, based on our view that the current design proposal is too limited and is therefore unlikely to achieve a number of its aims, including the desire for more breadth of study.

The proposed model for the ABS route (the non-occupational option) is for students to take three majors and two minors. Under the new proposal, a major is 330 guided learning hours (GLH), and a minor is 165 GLH. These values are very close to the current system, where an A-level is 360 GLH and an AS level is 180. Therefore, the overall proposal is not much different from three A-levels plus two AS levels, except for the additional stipulation that both maths and English are included.

Therefore, we don't believe that these proposals are likely to allow for much, if any, increase in breadth of study.

The table below illustrates some potential choices made by a hypothetical science student who is looking to progress into higher education (with options in italics):

Majors	Minors	(Subject area of potential destination – either further education or occupational)
Maths, Physics, Computing	English, <i>Chemistry/Music</i>	Physics, Engineering
Maths, Further Maths, Physics	English, Computing	Maths, Physics, Engineering
Biology, Chemistry, <i>Physics/History</i>	Maths, English	Chemistry, biochemistry, medicine
Chemistry, Biology, Maths	English, <i>Physics/History</i>	Chemistry, biochemistry, medicine

The pattern that emerges from those possible combinations is that there is, effectively, only a single slot that has some optional aspect to it. This forces students into choosing to either add a subject that supports their chosen area of study, or one that provides meaningful breadth. In a competitive

academic landscape, it is likely they will fill this option with additional experience that they think will contribute to their next step instead of one that provides breadth. As such, the potential for breadth is limited.

The lack of genuine opportunity for breadth arises from three features of the proposal:

1. There are only five slots into which a subject can be placed: three large and two small
2. The size of each slot is quite large, based on a quantum of 165 GLH
3. Two of those slots are pre-populated – with maths and English.

We recommend considering having an option for smaller sized modules; and/or allowing for other groupings based on size such as not restricting the combinations to 3 large and 2 small. (see also our response to question 26).

Currently, within the A-level system, students specialise much earlier than they do in most high-performing jurisdictions, such as France and Germany. Whilst this arrangement means that English students start their degrees at a higher level, the outcomes at the post-graduate level are at a similar level to international comparisons. This means that early specialisation does not seem to offer any apparent benefit to educational outcomes.

There are likely costs to specialising too early. By forcing 16-year-olds to make major academic decisions, we create a high-stakes environment that, through mistaken choices at 16, contributes to increasing drop-out rates at both A-level and in undergraduate degrees.

Therefore, there are good reasons to maintain breadth for longer. However, the current proposals for the ABS do not seem to offer much opportunity for increased breadth and there is a risk of the inclusion of single, isolated subjects as a mere token of breadth.

Question 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 views on this, please share below.

It is the IOP's position that any new qualification at 18 should replace A-levels. Whilst entry into Higher Education (HE) is by no means the only purpose of qualifications at 18, a survey done by the IOP of HE, as part of our work in responding to this consultation, shows that they would adapt to any new system that is put in place.

However, there is concern that existing reforms to, and uptake of, T-levels as well as AAQs might be impacted by the proposal that they are to be replaced before they have even been fully established. For a further explanation of this point please see our answer to question 54.

Question 22. To what extent do you support the proposal for how subjects will be selected to be included in the Level 3 Advanced British Standard programmes? (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know)

We are 'somewhat opposed' to the proposal for how subjects will be selected. The IOP would like to see a mechanism established for the development of curriculum content within each subject that brings in expertise from curriculum designers and subject specialists. In the current system, the broad criteria are defined by the Department for Education and the curriculum in each subject is, in effect, designed by exam boards. There should be more consideration given to what is important within a subject or discipline as well as what can be assessed.

We would like to see more coherence between subject combinations and suggest that consideration is given to a more diploma-like approach to pathways in the ABS.

The term "knowledge-rich" is used a lot throughout the proposal. However, this is not a well-defined term; it has come to be associated with specifications that are overloaded with a large collection of disparate facts. This overloaded nature is something that we view as regrettable. Whilst it is essential that curricula are structured on substantive content knowledge, there needs to be space to develop other aspects of knowledge: capability in and knowledge of the practices and ways of thinking within a discipline, its disciplinary knowledge, and knowledge of applications. It is the IOP's position that greater consideration must be given to what knowledge and capability endures beyond the end of the period of

study; and therefore, greater consideration must be given to developing deep and lasting capability and knowledge rather than extensive, short-term recall. We would like to see a curriculum, in physics, that aims to develop enduring, powerful knowledge and capability through a relatively small set of big ideas that include the practices and ways of thinking of physics.

Question 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. (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know, Free text box: 250 words))

The IOP neither supports nor opposes increasing the number of teaching hours. We recommend that, before the department takes the proposal for increased teaching time any further, it provides evidence that increasing teaching time will increase long-term capability and success. Without the evidence showing that there is a benefit, the IOP cannot support this proposed increase in teaching time. Our concern is that, by increasing teaching time, this proposal will worsen the existing issue with teaching capacity that many schools are facing.

Question 26. If you have views on the appropriate size of subjects, including whether we should standardise associated hours, please share them below. We particularly welcome any evidence of GLH delivered currently.

It is the IOP's position that the proposal for three majors and two minors is both restrictive and does not take full advantage of the opportunities presented by a major review.

We believe that providing more flexibility with the combinations or size of options would help. One such possibility would be to allow two majors and four minors. This would allow, for example, a physical science student to choose majors in maths and physics alongside minors in chemistry, English,

computing, and music. This provides an opportunity of a bit more breadth across subjects.

A second possibility would be to have a smaller base unit, such as 100 GLH. This would still represent about 1.5 hours per week over two years; and thereby allow for meaningful study within a subject. However, it would allow more subjects to be put together in a portfolio.

We recognise that, with such an approach, there is a risk of too much flexibility of choice making it impossible for schools and colleges to manage. However, the solution to that issue, and others, is to develop some pre-defined routes in a diploma-style qualification, which is an approach we outline further in our response to question 35.

Question 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.

A concern raised to the IOP by those working in the education sector, regarding T-levels, has been the low provision of employer placements that support the students' learning. We are aware that there is limited availability and that finding placements that are relevant to a student's chosen course is a challenge.

We are concerned that the ABS (occupational) might exacerbate that challenge. One of the stated requirements of T-level provision is that providers should offer courses that support local business and industry needs and that local provision is to be aligned to LSIP priorities. The proposal does not state that this will also be the case for provision of ABS (Occupational) routes.

It would be helpful to have clarity on whether local need will be a consideration of provision of ABS (occupational) routes as in some localities it could mean that the placement market would be saturated, which will limit considerably opportunities for provision of some courses in some locations, something we discuss in our response to question 46.

Question 29. We propose that we develop the English and maths offer within these reforms around certain principles. To what extent do you support these principles? (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know)

The IOP is somewhat supportive of the inclusion of maths and English as outlined in the proposal. [It is the IOP's position](#) that maths is a foundational subject for science, develops skills crucial for the economy of the future and, if supported properly, can provide young people, from all backgrounds, with opportunities to prosper and transform their world.

Studying English post 16 is likely to be of benefit for students wishing to read physics at university. At university level it is expected that students can write essays, or other long form pieces of work, to a high academic quality as well as to critically analyse texts they study. Therefore, we recognise how there is a potential benefit to physics students studying English post 16.

Increasing the number of students choosing English, maths and numerate studies, including physics, is welcome. But any plan needs to also address the shortage of maths and physics teachers and provide real support to young people from under-represented backgrounds to help students feel these subjects are a good fit and do well in them. Simply mandating compulsory maths until 18 is not enough in itself without the appropriate number of specialist teachers, infrastructure and support.

Question 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? (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know)

We strongly support the inclusion of maths to 18 and the opportunities that this will offer for studying physics, and the other sciences, more deeply and in a coherent manner alongside maths. However, we have some concerns about how the different maths options will work; and whether having a standalone option is the best way to teach maths within the occupational route.

Providing the 15% of students who currently do not continue with maths as a subject post 16 with a well-developed maths course would allow physics teachers to provide explanations based on numerical ideas that are more advanced than GCSE. It is our opinion that these explanations are often easier to follow than the non-mathematical versions.

Specifically in physics, it would be very helpful if such a course included ideas about calculus. Importantly, it would include the meaning of calculus; the techniques could be limited to a very small number of functions.

A further benefit of a maths-for-sciences course is that it would also provide students who want to progress to undergraduate degrees with a more authentic view of physics and engineering, as being mathematical, when they are making their degree choices.

For those who do not choose maths as a major, it would be desirable that the maths they study is made relevant to the subjects that they are taking and that it is either integrated into those subjects or is bespoke to them. This is another advantage of a diploma style qualification which would facilitate such tailoring and integration.

Question 33. If you have views on how English and maths can be delivered for students taking the occupational programme, please share below.

Currently, for T-levels, the mathematics content and requirements are integrated, in a bespoke way, into the T-level teaching. It is the IOP's position that this is a good approach to making sure that all students have the right maths capability at the right time and demonstrating its purposefulness. If the maths is pulled out of the ABS (occupational) into a standalone course and qualification, it's likely that the advantages of integration will be lost.

Question 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.

The IOP would like to see a more fundamental approach to considering major reform in this phase and other phases of education.

For the 16-to-19 phase, there needs to be a discussion about the possibility of a more diploma-style qualifications with a fixed number of pre-defined combinations.

The advantages of such a structure are:

- Coherence that would arise through links between subject areas; as discussed, the physics and maths components can build on and relate to each other. Additionally, and in a similar way, aspects of other pairs of subjects such as biology and chemistry can build on each other. Thereby making the whole (of the learning) more than the sum of the parts.
- Efficiency and avoiding repetition as a result of any given content being in just one place (for example the kinetic theory of matter; the structure of the atom; complex molecules and so on).
- Interdisciplinarity to show the links between different disciplines and develop the ability to apply knowledge outside the siloes of school subjects.

To illustrate all of the advantages above, there might be a single module on mechanics – it would neither be in maths nor in physics, but it would bring together ideas from physics, mathematics and computing in just one module. This would allow teachers and students to explore ideas within a given subject to a much greater depth because they can draw on knowledge that has been covered in another subject. They do not have to worry that some students in the class have not chosen that subject.

There will be similar examples in other subjects such as a historical analysis of a religious event within a geopolitical context.

On a separate point, we note that there is mention in the foreword about the pace of technological change, including Artificial Intelligence. However, it is not clear that there are any specific proposals to address those changing needs. For example, how will these reforms prepare all students to live with and make the best use of AI technologies? While the focus on maths is welcome, over the timeframe of implementation could computer science and AI become as important as tools for understanding our world? This question illustrates three of our thematic concerns about the current proposals:

- They are currently very limited in content – in that there is no proposal for how to help students be AI capable and literate;
- They are too limited in stage of education treated – any serious changes to build a basic AI / computer science capability would need to begin pre-16;
- The base-unit of 165 GLH is too large – work relating to AI or computing would not necessarily need to be the full size of a Minor – and addressing the full scale of the opportunity is unlikely to be achievable through a stand-alone module.

Question 36. We have proposed assessment principles to underpin the ABS. To what extent do you support these assessment principles? If you have further views on this, please share below. (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know. Free text box: 250 words)

We are somewhat opposed to the assessment principles that underpin the ABS proposal. This is because, as previously stated, this is a major review, and it should therefore take the opportunity to review at a deeper level both the assessment methods and the accountability system.

The purposes of an assessment system include:

- To provide young people with information about their strengths and next steps
- To reward them for their effort and capabilities
- To provide information for their future employer or course provider
- To establish a means of ensuring that learning has been effective, authentic and high quality

We are concerned that a summative assessment system, based on written exams that comprise a limited number of styles of assessment are not contributing effectively to those purposes. These exams are only able to test a very narrow range of capabilities. We further believe that, in the existing system (which will continue into the ABS era under the current proposals), there is an over-emphasis on short-term recall. As such, there is very little variation in a student's performance between exams in different subjects, meaning that performance in the assessment provides only limited information about students' strengths and as a result many students do not get opportunities to demonstrate some of their capabilities (because they are not assessed in the current system). This all means that the students

who are most rewarded are those who are successful in knowledge-based tasks.

Within the sciences this emphasis has manifested itself in assessment schemes and styles of assessment being narrowed in the last 20 years. There is no longer an extended practical investigation; nor a practical exam that tests procedural knowledge and there is very little that tests deep conceptual understanding, comprehension or the ability to critique an argument.

Most assessments rely on coded answer questions or short answer-type questions although these are sometimes structured into a longer question. This style of assessment does not reflect the ways of thinking within physics or the other sciences post-secondary education. Additionally, this style of assessment has forced teaching to become overly reliant on coaching students to perform well in such tests, and teaching has become concentrated on short-term memorisation of information and techniques.

We would like to see a major review of assessment methods that makes use of modern technology, puts trust in teachers, and focuses on each student's needs from the assessment.

We recommend that consideration is given to including some forms of coursework in the sciences, such as undertaking practical projects.

High stakes testing

Some of the concerns above have arisen from the increasingly high stakes attached to assessments. There is pressure on schools, school leaders and teachers for their students to perform well in exams, which has led to some of the behaviours described above and to schools gaming the system in terms of their provision and the options that they offer students.

This can be seen most starkly in the increasing requirement for high entry grades to get onto some A-level courses and different grades for different courses. In many cases, it is only students who are likely to get the highest grades in an A-level subject who are allowed onto the courses. This can be seen in the

fact that very few students get D and E grades in A-level physics.

We would advocate a review of school accountability measures and a move to disentangle measurements of school performance from the raw results of student performance.

We recommend that the DfE commission research to look at whether assessment methods and the existence of high stakes tests correlate with student outcomes, student wellbeing and teacher retention. For example, in Canada there is very little high stakes testing and teachers are trusted; there is no evidence to suggest that student outcomes are reduced – indeed, they may be improved because recruitment, satisfaction and retention of teachers is better.

Question 37. We have proposed principles to underpin the new grading system. To what extent do you support these grading principles? If you have further views on this, please share below. (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know. Free text box: 250 words)

The IOP fully supports of the proposed principles that will underpin the new grading system, and we are particularly pleased to see the commitment to “have a scale that is simple to understand and consistent across subjects.”

It is currently the case that there is an incomparability in grades between subjects. Using a number of different methods of analysis, [Coe et al](#) found that some subjects, including physics and maths, are graded more severely than others with a range of about two grades between physics and the least severely graded subjects.

This incomparability has been recognised by Ofqual, but no action has been taken. A major reform of the exam and grading system provides an opportunity to align the relative likelihood of achieving the same grades in different subjects and we strongly recommend that such an alignment is made.

Question 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? (Options: Fully support, Somewhat support, Neither support nor oppose, Somewhat oppose, Fully oppose, Don't know)

The IOP fully supports the proposal that students will have individual grades for each subject that they take. In our survey of higher education, 100% of respondents said that there is a need for individual grades, and that this would be essential for applicants wishing to study physics. This survey only referred to the ABS model as proposed, and it could be expected that there would be a different requirement for a diploma-style qualification.

Question 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? (Options: Yes, No, Don't know. Free text box: 250 words)

The IOP does not see there being any significant value in giving students some type of overall Advanced British Standard award as it is currently proposed. When we surveyed heads of university physics departments, the majority did not see any value in it. We therefore do not agree that students should receive some type of overall Advanced British Standard award.

Question 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?

Based on what is said in the proposal, we expect that, for a typical 16- to 19-year-old student, there will be an increase in structured learning time from 1,280 to 1,475 hours. This is a 15% increase in contact hours, requiring a 15% increase in teacher time for this age group. Some of this might be absorbed by having larger groups and there may be opportunities for co-teaching aspects of a major and a minor subject, although the benefits of smaller class sizes are well known in education.

We expect that the biggest requirement for additional teaching hours will be for maths. This is because if the ABS is implemented as it is currently proposed, there will need to be different bespoke offerings for students with different prior attainment and subject choices, meaning there will be less opportunity for co-teaching.

For maths and English, there will be a significant increase in the number of students that we estimate would be about four-fold and more than ten-fold respectively. These rises will increase the staffing and teaching space demand for these subjects. It is likely that there will also be increased requirements in the sciences - though these are hard to quantify at this stage; therefore, we would like to see an analysis of the impact the increased demands will have on teaching and laboratory space as well as staffing requirements for these subjects.

We view it as unlikely that the changes will improve the retention of teachers, and, when we surveyed physics teachers on this topic, over 50% said they did not expect the proposal to have a positive impact on teacher retention. However, there is nothing to suggest that it will damage retention rates, though it is worth noting they are currently very low.

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

It is the IOP's position that any curriculum review will only be successful if all school staff are both involved in the change, to achieve commitment and buy-in, and that they are supported through the change with professional learning. The amount of time required to manage the change within schools and to support the change, with professional learning, will depend on the amount that the system changes.

As has been mentioned, in answers to previous questions, the current proposal looks more like an evolution of A-levels and AS levels rather than a full reform. As such, the subject content, methods of teaching and types of assessment will not change a great deal and we would expect subject teaching staff will be able to adapt with fairly minimal professional support.

However, if more fundamental and wider ranging changes are made, then there would need to be

significant investment in supporting schools, colleges, and staff to adapt to the change, including professional support for teachers in thinking differently about their teaching and assessment methods. Additionally, whatever the scale of change, within any occupational offer, we believe that there is a need to support employers on how to support and fairly assess students on placements.

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

It is the IOP's view that the scope for reform of 16-19 education will be limited unless there are also reforms up to 16.

The assessment system at 16 needs to be reformed. GCSE exams assess a very narrow range of capabilities and are rooted in short-term recall. These exams are then used as a filter for students' next steps. High grades will mean that they are allowed to take A-levels and low grades will mean that they are steered to a different route, which is often a technical route. Without changing this filtering system based on academic performance to one based on choice at 16, it will be impossible to achieve parity of esteem between the academic and technical routes.

A related problem is that students get very few opportunities to experience or develop technical skills up to the age of 16. This is true in terms of the subjects that are on offer, and the content of those subjects. We are concerned about the reduction of practical work in the sciences and the proposal for ABS assessment to be done so heavily by examination alone.

We are particularly concerned about how young people are not pursuing physics post-16, in the current system, because too many children hear negative messages about it, about themselves, and about who can do the subject.

To create effective pathways from pre-16 education for students wanting to study physics, any reform of education needs to make whole-school equity plans mandatory in all nurseries and schools. This should be underpinned by a director-led implementation unit in the Department for Education and a

minister responsible to drive these efforts – along with changes to teaching standards, teacher training and CPD, and school inspections.

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

The IOP recommends that this review of post-16 education should include a review of the whole education system.

In a part of that review, there should be discussion about including more technical, engineering, and practical activities within existing subjects and in the requirements of the national curriculum. This would benefit students in two ways:

- Firstly, it allows students who intend to take post 16 technical/ occupational routes to develop their capabilities earlier.
- Secondly, it makes it possible for more students to consider if the occupational routes will suit their interests and capabilities when they have to make a choice about post 16 education.

The IOP believes that to achieve parity of esteem between the two ABS routes, the education prior to it needs to prepare students equally for both.

Another part is to provide application and occupational contexts, across a range of occupations, within all areas of the curriculum, so as to embed information that will inform choices at 16. This should be linked with the CEIAG within a school or college so that advice and guidance on careers is integrated and not stand alone. And students can make decisions that are informed and suited to their ambitions, interests and capabilities.

The ABS will need to do better than the current system in ensuring young people do not feel that their choice of subject is limited by their background. Having already mentioned the need for Whole School Equity Plans in response to the previous question, it is worth reiterating that teachers need to be trained to be aware of their own biases as well as how best to support and nurture choice in young people.

Question 54. If you have views on the impacts of the Advanced British Standard reforms on other groups of students who take post-16 qualifications, please share them below. Examples of these groups could include adults in further and community education providers, students in custodial settings, and students in devolved administrations, Crown Dependencies or overseas.

We would be interested in having further information provided by the Department for Education on the following questions:

- What qualifications will be available to adult learners? In the academic space, the question is whether they will be able to take major and minor ABS modules as standalone qualifications.
- What will happen to existing and proposed qualifications? Will there be small qualifications that are suited to evening classes?

There is a related concern for students who might struggle, for whatever reason, with the size of the full ABS – whether the academic or the occupational route. The affected students would include students with SEND needs and students with decent, but lower, attainment at GCSE. Such students would benefit from more time to deal with their studies.

Currently, they have options for attaining level 3 qualifications on reduced or alternative programmes. In the ABS proposals, they would be expected to tackle the full qualification with all of its elements (i.e. three majors and two minors; or the double occupation module along with minors in maths and English). There is a risk that this large programme of study will overwhelm some students and may cause them to drop out.

We are concerned about the impact the proposed qualifications name might have on students in the devolved nations. By calling a qualification designed for England ‘British’ we believe there is a risk of confusion internationally about its availability for students across Britain and Northern Ireland. In such cases of confusion these students might be adversely impacted for not having the qualification when applying outside of the UK for work or further study.

Question 55. If you have views on the impacts (positive or negative) of the Advanced British Standard reforms on any group with a protected characteristic, please share below.

The IOP's position on this question will depend greatly on the final proposals. However, there are two areas of concern that we already have. Firstly, we believe that further consideration is required of the capability of schools in rural and coastal communities to feasibly offer as broad a subject selection as in more populated areas. Unlike their peers in more densely populated areas, if their education setting does not offer the course(s) that they seek, they may not be able to travel easily to another setting that does.

Secondly, we are concerned about what impact the increase in GLH will have on students in economically deprived areas. The most recent census showed that children in economically deprived areas are more likely to fulfil care responsibilities at home. Any increase in GLH could severely impact these students, due to their pre-existing obligations. We would therefore like to see the proposal include more on what will be done to support students who are care givers.

There are concerns about emerging social and geographical disparities in access to high quality placements in the T-level. We therefore recommend that consideration is given in the ABS to how all students have access to high quality placements regardless of their location, or the, lack of, their parents' or carers' contacts with local employers.

Question 58. If you have further views on anything else associated with the Advanced British Standard not covered in the questions throughout the consultation, please share below.

We'd like to make a few final points after which we will summarise our main recommendations.

First, the IOP is supportive of reform to 16-19 education. The proposals put forward include many good ideas. Within the proposals for an ABS, we would like to see:

- A review of school accountability measures and a move to disentangle measurements of school performance from the raw results of student performance
- The inclusion of coursework as a contributing factor to a student's final grade in a subject, especially in physics

- A reform of the exam system to align the relative likelihood of achieving the same grades in different subjects
- Evidence from the Department for Education that increasing the teaching time will increase long-term capability and success of students
- A detailed explanation of how the proposal will ensure equal access regardless of ethnicity, economic background, geographic location, or gender.
- The IOP recommends that these proposals also introduce Whole School Equity Plans as a mandatory requirement in schools as a means of supporting equality within the proposal

Secondly, physics, and the uptake of physics, is extremely important in preparing young people for employment in a high technology, innovation-based economy. Therefore, any reforms must aim to increase the uptake of physics, as has been the Government's strategy for some time. At the very least, any reforms should not harm the uptake of physics.

And thirdly, the scope and ambition of reform go further. In a fast-changing, high-technology world, our education system must contribute to our future by:

- preparing young people for employment in a high-technology, innovation-based economy,
- enabling and underpinning global leadership in the sciences,
- improving wellbeing and living standards,
- contributing to an accelerated transition to a green economy,
- preparing young people to live with and make the most of new technology (such as AI).

Achieving these outcomes needs more ambitious reform than is currently being proposed. Therefore, we recommend:

- A fundamental review of the purpose of education across all phases
- Major reform of the national curriculum up to 16
- Establishment of long-term mechanisms and structures to bring expertise and stability to curriculum and its reform
- A fundamental rethink of the purposes and methods of assessment at 16 and 18

Given that this is proposed as a ten-year reform, this is the time to act. If we do not take the opportunity for major reform in this cycle, we will be left a long way behind our competitors.