

Advanced British Standard Consultation Response: A Summary

Submitted to the Department for Education, March 2024

The Association for Science Education (ASE) is an active membership body that has been supporting all those involved in science education from pre-school to higher education for over 100 years; members include teachers, technicians, teacher educators, researchers and others involved in science education. We play a significant role in promoting excellence in teaching and learning of science in schools and colleges. Working closely with the science professional bodies, industry and business, we provide a UK-wide network bringing together individuals and organisations to share ideas and tackle challenges in science teaching, develop resources and foster high quality Continuing Professional Development. We are a Registered Charity with a Royal Charter, owned by our members and independent of government. We seek to create a powerful voice for science education professionals in order to make a positive and influential difference to the teaching and learning of science throughout the UK and further afield.

Our response has been informed by member forums, discussions with our committees comprised of experts and practitioners and teacher consultations. We have had responses from teachers from across the age-ranges and from the devolved nations, technicians, researchers, ITE providers and others from our broad range of science educator members.

The need for radical reform of Science Education

ASE support the reform of post-16 education and agree with the aims and principles of the ABS proposal.

However, we do not feel that the proposal goes far enough in addressing the needs of all young people and the education community. It is not clear whether learning from previous research including the 2004 Green Paper: 14-19 Opportunity and Excellence has been incorporated.

We are concerned by the frequent use of “knowledge-rich curriculum” in the proposal. We urge a review of the curriculum prior to and including 16-19, to move away from the content heavy curriculum which prioritises rote memorisation over critical thinking, problem solving and practical skills and discourages cross-disciplinary exploration.

Additionally, the Curriculum should be updated to include all relevant subject areas including a greater focus on engineering, climate education and sustainability.

Implementation Concerns

There is little in the proposal to alleviate the pressures that teachers are under. In fact, with the roll out as planned, teacher shortages will be felt even more acutely leading to timetabling challenges (staffing and buildings) and so subject choices may be restricted rather than broadened. We are calling for more investment in estates, professional development for teachers and technicians and increased funding for practical equipment.

The ABS has the opportunity to positively reform the *teaching profession* by raising the status of teachers, listening to and addressing concerns about workload, lack of training and underfunding. ABS could set the blueprint for the future of education to reinvigorate our education system. ABS can provide the required radical steps forward to future-proofing our

education system. More innovative reform is needed to reverse the crises that our teaching profession face. We support increased Guided Learning Hours and the other principles outlined in the consultation, however, we are hearing concern and anxiety from our teaching colleagues about how this will be implemented given the extreme pressure on workload, lack of teaching staff and tight budgets, even with the ten-year lead time.

Technicians are often the unsung heroes of the science department who support teachers, help alleviate stress and workload and provide collaboration opportunities. Their work to support science teams should not go understated. Evidence suggests that estates and equipment are already under pressure with some schools reporting that they have inadequate access to laboratory equipment, digital resources etc. (BESA Report). Investment in equipment and training for technicians must be included in any plans for ABS.

Raising the status of Science Educators

We advocate the entitlement of at least 35 hours per year of high-quality, subject-specific, CPD to enable teachers to refresh knowledge, regain passion for their subject and collaborate with others. Consequently, the expertise of the teacher would be recognised and the status of the profession raised.

Research highlights that science trainees lack the required confidence and competencies in the maths skills required to support the adequate progress of young people in science. It is imperative that teachers are given access to the time and resources which allows them to develop professionally.

In science, reform will also require additional training and resources for technicians as well as teachers. Changes to the curriculum, introduction of new courses, new assessment modes will all directly impact technicians who will need timely detailed information and training so that they can support teaching colleagues.

Concern about Disparity of Esteem and Disparity of Opportunity

70% of our surveyed members disagree that those with additional needs e.g. SEND, young carers, disadvantage, EAL will benefit from the ABS approach.

More funding is needed to create a level playing field for students with SEND: including funding for additional staff and their development, educational resources and science equipment. Early identification and support for students with additional needs and incorporating advancements in AI must be prioritised to create inclusive learning environments.

We are concerned about the disparity in esteem between the occupational and non-occupational route. We are concerned by the divisive distinction between the ABS and the ABS Occupational

We are concerned by the geographical, socio-economic and staffing factors will lead to inescapable disparity for young people leading to inconsistencies in opportunity for young people e.g. subjects offered and industrial placement opportunities

We are concerned by the narrow outlook on the use of summative assessment

English and Maths to 18

We agree that English and maths are essential for all young people and particularly those who wish to continue to engage with science. Increasing the number of young people who study these subjects is welcomed but any plan needs to also address the shortage of maths teachers and provide real support to trainee teachers of all subjects in increasing their maths confidence, knowledge and skills.

Mandating compulsory maths until 18 is insufficient without consideration of how it will be implemented, resourced and teachers will be supported so that young people will not be disenfranchised and the principles underpinning the move are therefore incompatible with the outcome.

We advocate for the maths to be integrated across the chosen options or tailored to their occupational aims. This is a further advantage to the diploma style qualification. Learning from the majority of OECD countries where children are required to study some form of mathematics to the age of 18, in moving towards a goal where all young people, and their teachers, have a positive, active, and empowered relationship with mathematics. We recommend that mathematics needs to be incorporated into all curricula, just as English language has been in recent decades. It is now normal for all subjects to award subject exam marks for spelling and grammar, so we need a shift towards numeracy, data and graphical skills becoming part of all subjects at 5-16, much like has happened in recent years for science and geography. A major stumbling block to this happening is teacher confidence and skill levels, in addition to significant teacher shortages in a range of subjects including science.

We question whether the 160 GLH proposed for English and Maths is the correct approach and would advocate for smaller divisions of GLH which could also include other compulsory or optional components such as digital skills, for example.

Further opportunities for exploration

We would like to see further exploration of how AI can be used to assist in the assessment process. including consideration of AI assisted adaptive testing. By leveraging AI-powered tools, such as natural language processing and speech recognition, assessments can be designed to accommodate various learning styles and accessibility requirements, enabling students with SEND to engage more effectively with the material and demonstrate their understanding in ways that suit their individual needs. Advancements in AI can also offer benefits to teacher workload, equality of opportunity, personalised student feedback and personalised learning.

We would encourage consideration of a broader range of assessments modes which would resemble more of a portfolio of evidence but also could include testing when ready, for example.

We would expect there to be a pilot of the ABS proposals as more detail is decided. A pilot would include detailed timescales, a breakdown of the main activities and evaluation of the impact of various factors on the offered choice and uptake of subjects in different settings e.g. FE college vs 11-19, rural and coastal vs inner city.