Response ID ANON-B1Q8-3ATV-T

Submitted to Curriculum and Assessment Review Submitted on 2024-10-18 14:32:45

Foreword from the Review Chair

Background to the Review

Why does the Review matter?

What is in scope of the Review?

About this call for evidence

Who is this call for evidence for?

Section 1: About you

1 Are you responding as an individual or on behalf of an organisation?

Organisation

Section 1: About you

3 If you are responding on behalf of an organisation, which of the below best describes which part of the sector your organisation represents? [If more than one applies, please select the one that you think is most important to understanding your consultation response.]

Professional association

Please describe:

4 What is the name of your organisation?

Organisation name: Institution of Engineering and Technology

5 What is your role within the organisation?

Job role:

Education & Skills Policy Manager focusing on STEM education from Primary up to age 16.

Section 1: About you

6 What is your name?

Name: Katie Ingrey

7 What is your email address? [Please note: If you are willing to be contacted about your submission, please provide your email address. You do not have to give your email address, and your views will be considered whether or not you provide this.]

Email address: publicaffairs@theiet.org

8 Are you happy to be contacted directly about your response? [Please note: The Review may wish to contact you directly about your responses to help our understanding of the issues. If we do, we will use the email address you have given above.]

Yes

9 Would you like us to keep your responses confidential?

No

Reason for confidentiality:

Definitions

Section 2: General views on curriculum, assessment, and qualifications pathways

10 What aspects of the current a) curriculum, b) assessment system and c) qualification pathways are working well to support and recognise educational progress for children and young people?

What is working well?:

The national curriculum provides a solid foundation for STEM education. It covers key concepts and fundamental principles.

Young people are eager to learn in particular maths and science from early years right up to later education, which can be seen in the uptake of STEM subjects in the curriculum.

11 What aspects of the current a) curriculum, b) assessment system and c) qualification pathways should be targeted for improvements to better support and recognise educational progress for children and young people?

What should be improved?:

The current curriculum is too theory heavy. Schools are also encouraged to focus on achieving high exam results as funding is interlinked to this, rather than expanding and developing students with the right skills for being part of the workforce.

The current EBacc system limits and discourages schools on teaching vital subjects such as Design and Technology due to where they sit, and that they are not seen as priority subjects. There has been "68% decrease in the number of students taking Design & Technology at GCSE level " and this has continued to decrease year on year. If the government is to deliver a broad and balanced curriculum this something that should be looked into as Design and technology is gateway subject into engineering. It also offers a chance for young people bring together creative and practical elements which feature heavily in the engineering sector. Without this young people are given very little time in the curriculum to explore engineering, often STEM subjects are taught during extra-curricular activities.

The STEM curriculum is too focused towards science and maths, missing the engineering and Technology aspects. Engineering currently does not appear in the national curriculum, though it has slight mentions but there nothing directly naming or highlighting this is engineering. This is critical as we know there is severe and growing skills shortage in the engineering sector with an estimated shortfall of over 173,000 workers in the STEM sector (STEM learning).

The current curriculum doesn't prepare young people for their future careers/ pathways. In our 2023 skills survey 63% of engineering employers stated that the UK education system does not prepare graduates well for industry – falling substantially behind other nations (IET international green skills 2023 survey). This is particularly important in the promotion of apprenticeships as viable route into industry and higher education. Careers education and pathways needs overhaul to ensure there is focus on future careers other than attending university.

Section 3: Social justice and inclusion

12 In the current curriculum, assessment system and qualification pathways, are there any barriers to improving attainment, progress, access or participation (class ceilings) for learners experiencing socioeconomic disadvantage?

Barriers for socioeconomically disadvantaged:

It's important that young people right across the UK have access to STEM learning and opportunities. Recent Engineering UK stats reveal that young people (aged 13 to 19) in London are twice as likely to know what subjects or qualifications they need to become an engineer than young people in the West Midlands (60% compared to 30%).

Only 35% of young people (aged 13 to 19) in lower income households know what subjects they would need to become an engineer. This compares to 52% of young people in higher income households (Engineering UK). This is due to many STEM activities being extra-curricular and relying on additional funding to run STEM outreach activities as they can be costly and time consuming for schools to deliver.

T-levels are also affected by location of providers in the UK, as it is dependent on what industry is willing and able to offer local placements to students. As reference by the education committee's report "The future of post-16 qualification (19 April 2023) "Regional variations in economic activity are limiting factors in students' access to T Level courses and placements, as many industries, such as engineering or media and creative arts, are concentrated in larger cities". More needs to be done to raise the profile of T-levels and the benefit this can have on regional skill demands in local areas and this should be linked into the work of Skills England.

13 In the current curriculum, assessment system and qualification pathways are there any barriers to improving attainment, progress, access or participation which may disproportionately impact pupils based on other characteristics (e.g. disability, sexual orientation, gender, race, religion or belief etc.)

Barriers based on protected characteristics:

There is lack of representation in the current curriculum and for the UK to have chance of tackling the skills shortages we need to ensure young people are given diverse example of modern role models in STEM at an earlier age if we are to have impact. Currently these experiences happen too late and are often geared more towards subjects and achieving high exam results/

Our 2021 Skills Survey report showed that just over 3 in 10 organisations have taken action to improve diversity of their engineering and/or technical workforce across gender (33%) or ethnicity (30%). Visibility and representation matters, we need to be providing real life role models for the younger generation to look to and to tell them first-hand about their experiences and how to get into the sector.

With 51% of the population being women, we have a huge opportunity to tap into this talent pool. Engineers develop products and services for everyone so we must ensure diversity of thought and innovation in order to create inclusive solutions that work for us all.

14 In the current curriculum, assessment system and qualification pathways, are there any barriers in continuing to improve attainment, progress, access or participation for learners with SEND?

Barriers based on SEND:

15 In the current curriculum, assessment system and qualification pathways, are there any enablers that support attainment, progress, access or participation for the groups listed above? [e.g. socioeconomically disadvantaged young people, pupils with SEND, pupils who are otherwise vulnerable, and young people with protected characteristics]

Enablers:

Section 4: Ensuring an excellent foundation in maths and English

16 To what extent does the content of the national curriculum at primary level (key stages 1 and 2) enable pupils to gain an excellent foundation in a) English and b) maths? Are there ways in which the content could change to better support this aim? [Please note, we invite views specifically on transitions between key stages in section 9.]

English and maths - primary content:

English and maths are taught to good standard however their practical applications are often missed. Young people rarely learn the context of how to use these subjects in their personal lives or how they can help to achieve their future aspirations.

More work is needed to teach children less theory but more how for example studying maths can lead to future career or how they will need to use maths in the real world.

17 To what extent do the English and maths primary assessments* support pupils to gain an excellent foundation in these key subjects? Are there any changes you would suggest that would support this aim? *These include SATs at the end of key stage 2, the phonics screening check and the multiplication tables check.

English and maths - primary assessment:

18 To what extent does the content of the a) English and b) maths national curriculum at secondary level (key stages 3 and 4) equip pupils with the knowledge and skills they need for life and further study? Are there ways in which the content could change to better support this aim?

English and maths - secondary content:

As mentioned in the previous section the current curriculum is content heavy but the real world applications and exposures to future careers is limited. We know that there are perception problems in variety of careers such as engineering where they are seen as "too difficult" or not for "girls ect". This is due to lack of exposure to role models and types of careers in early education.

The earlier the interventions the better, as we risk waiting too late to truly have impact to introduce the ideas of what scientist is and that a variety of careers are open to all regardless of where you are based, gender ect.

19 To what extent do the current maths and English qualifications at a) pre-16 and b) 16-19 support pupils and learners to gain, and adequately demonstrate that they have achieved, the skills and knowledge they need? Are there any changes you would suggest that would support these outcomes?

English and maths - qualifications:

The current maths and English qualifications show good example of understanding the fundamentals of English and Math, though this doesn't often translate into working world.

Often for the apprenticeship route there is a requirement for already achieved level 2 in English and maths before starting intermediate apprenticeships. The reason for this is if a young person has not achieved at least this level they will struggle to complete their apprenticeship with the additional workload. This can also have negative impact as employers feel they are teaching/ ensuring young people has the basic skills to complete their apprenticeship.

More should be done ensure reaching the required level is accessible and work with industry to see what skills are needed to complete apprenticeships or prepare young people with the right skills for the workforce.

20 How can we better support learners who do not achieve level 2 in English and maths by 16 to learn what they need to thrive as citizens in work and life? In particular, do we have the right qualifications at level 2 for these 16-19 learners (including the maths and English study requirement)?

Support for learners who do not achieve level 2 by 16:

Other pathways should be brought into the education system earlier - currently young people are pushed towards attending university. Apprenticeships and other technical routes are often only presented to the well informed or those that have a clear idea of what they want to do for their future careers.

We should also consider whether maths to certain level is required and whether there could be another qualification that shows functional maths to good standard. This qualification will need to have industry support who often feel they are teaching apprentices skills they should of learnt in the education system.

21 Are there any particular challenges with regard to the English and maths a) curricula and b) assessment for learners in need of additional support (e.g. learners with SEND, socioeconomic disadvantage, English as an additional language (EAL))? Are there any changes you would suggest to overcome these challenges?

Challenges with curricula and assessment - changes to overcome these:

Section 5: Curriculum and qualification content

22 Are there particular curriculum or qualifications subjects* where: a) there is too much content; not enough content; or content is missing; b) the content is out-of-date; c) the content is unhelpfully sequenced (for example to support good curriculum design or pedagogy);d) there is a need for greater flexibility (for example to provide the space for teachers to develop and adapt content)?Please provide detail on specific key stages where appropriate.*This includes both qualifications where the government sets content nationally, and anywhere the content is currently set by awarding organisations.

Subject content:

Design & Technology as a subject has long been in decline in schools. We must reverse this trend by reinvigorating the subject and aligning it much closer to engineering and thus, inspire more young people. The 2017 subject reform further increased the decline in uptake of the subject with GCSE's dropping significantly from 2017-2019. D&T was merged with D&T Systems and Control, Product Design, Textiles, Graphic Communication, and Resistant Materials into a single qualification, and separated Food into Food and Nutrition. The proportion of examined content has increased. This has meant teachers have had to teach a broader range of technical 'core' content across all material areas in less depth, as well as one or more material areas in the same or greater depth as before.

This has meant teaching of Design and Technology has been inconsistent across the UK. There is good practice in some schools who have moved away from traditional woodwork to focus on design and design live cycle which brings in the elements of design from variety of careers such as engineering which are sought after in industry.

23 Are there particular changes that could be made to ensure the curriculum (including qualification content) is more diverse and representative of society?

Changes to ensure curriculum is more diverse and representative of society:

Representation matters. Currently the curriculum gives very few examples of diverse examples of scientist , engineers / historians in the curriculum to name a few.

More needs to be done to ensure curriculum subjects are being taught in a way that empathises linkages, purpose, and application to the world we live in. Without this, sectors such as engineering, design and technology are not getting the recognition or interest from students. Hands on experiences, and experiences of engineering start too late to have any impact. To truly achieve more interest in practical subjects, we need to start much earlier. Without this we risk creating barriers and holding back young people from exploring their future career options.

24 To what extent does the current curriculum (including qualification content) support students to positively engage with, be knowledgeable about, and respect, others? Are there elements that could be improved?

Respect for others:

25 In which ways does the current primary curriculum support pupils to have the skills and knowledge they need for life and further study, and what could we change to better support this?

Primary - skills and knowledge needed for life and further study:

The current curriculum doesn't prepare young people for their future careers/ pathways. In our 2023 skills survey 63% of engineering employers stated that the UK education system does not prepare graduates well for industry – falling substantially behind other nations (IET international green skills 2023 survey). This is particularly important in the promotion of apprenticeships as viable route into industry and higher education. Careers education and pathways needs overhaul to ensure there is focus on future careers other than attending university.

26 In which ways do the current secondary curriculum and qualification pathways support pupils to have the skills and knowledge they need for future study, life and work, and what could we change to better support this?

Secondary - skills and knowledge for life and further study:

The secondary curriculum builds more on the idea of associating subjects with future careers but again the connection could be stronger from simply explaining what they are doing is designing like a designer ect.

27 In which ways do the current qualification pathways and content at 16-19 support pupils to have the skills and knowledge they need for future study, life and work, and what could we change to better support this?

16-19 - skills and knowledge for life and further study:

The current qualification builds good foundational knowledge/ theory on variety of subjects. More time should be given to careers education and exploring other pathways other than university.

Currently skills are focused on academic studies and not a lot of time is given to vocational training or exploring these pathways due to curriculum time and in experience within in the teaching team.

Section 6: A broad and balanced curriculum

28 To what extent does the current primary curriculum support pupils to study a broad and balanced curriculum? Should anything change to better support this?

primary - broad and balanced:

Currently the primary curriculum is focused on Maths and English teaching. Science should also be given the prominence it deserves as waiting to secondary to really explore the subject is too late.

We know we need to expose concepts of careers earlier to students to have a real impact as the way the curriculum is based means this tends to happen in secondary and post-16 education which is too late as young people have already made opinions on what subjects they enjoy and what subjects they find difficult.

Project – based work should be considered as it can allow for cross-curricular learning where multiple subjects can be combined to give broader and more balanced learning experience bringing science , engineering learning with geography or English.

29 To what extent do the current secondary curriculum and, qualifications pathways support pupils to study a broad and balanced curriculum? Should anything change to better support this?

secondary - broad and balanced:

The current curriculum offers good foundation of core content, but the curriculum is too broad and content heavy. It is difficult for teachers to deviate from the core curriculum and expose children to wider suite of subjects.

Project based learning should be considered to allow for greater breath of subjects to be taught in parallel.

30 To what extent do the current qualifications pathways at 16-19 support learners to study a broad curriculum which gives them the right knowledge and skills to progress? Should anything change to better support this?

16-19 - broad and balanced:

Currently the curriculum is geared towards schools achieving good examine results and for the majority of students they are pushed toward attending university.

For timetable time needs to be given to careers education. Often these tend to be one off events and are dependent on local industry in the local area to provide engagement with the school. We need a more strategic approach to careers provision in schools and colleges in England and for greater investment in the careers system and infrastructure. This particularly important for engineering and STEM sector where there is lack of awareness for a career for young people and there is well know skills shortage.

31 To what extent do the current curriculum (at primary and secondary) and qualifications pathways (at secondary and 16-19) ensure that pupils and learners are able to develop creative skills and have access to creative subjects?

support for creative skills and access to creative subjects:

The current Ebacc system makes this harder depending on what school a young person is attending. Design and Technology is not seen as core subject so many school's do not teach the subject or they do not have facilities or expertise to teach the subject. This can also be barrier for the other creative subjects.

Section 6: A broad and balanced curriculum

32 Do you have any explanations for the trends outlined in the analysis and/or suggestions to address any that might be of concern?

Explanations of trends or suggestions to address:

Maths tends to be the subject with the most uptake in STEM suite of subjects. However it is important to highlight that in 2024 A level results showed there is gender gap between Maths which still exists with 63% of males taking the subject compared to 37% of females. At GCSE stage this tends to be more balanced, so some work needs to be undertaken to see why there is drop off from GCSE to A level.

The general trend for slight up take in wider STEM is not usual as the current curriculum is more focused towards maths and science. It is good to see increases in Technology element of STEM but this also has wider reasons such as having the right teaching staff to deliver subject (computer science) as well as schools having the right infrastructure to deliver the subject. For instance the Digital Poverty Alliance reports 26% of young people do not have access to laptop or similar device in the UK. This will affect the uptake of these kind of subjects as students will struggle to keep up with the work as there only access to devices will be during school hours.

The decline in Design and Technology is well documented. Though it important to note there was slight increase in uptake this year. The Design and Technology GCSE has increased from last year (88,607 vs 86,840). The reasoning for the decline is due to number of factors. The 2017 subject reform further increased the decline in uptake of the subject with GCSE's dropping significantly from 2017-2019. The proportion of examined content has increased. This meant teachers have had to teach a broader range of technical 'core' content across all material areas in less depth, as well as one or more material areas in the same or greater depth as before.

Closely coupled with this is the need to review the perceived value of the subject within schools. Moving a revived D&T into the headline school performance measures (i.e. the EBacc) would send a clear signal to all, including the industry sector, that engineering is considered 'important' within our education system.

Section 6: A broad and balanced curriculum

33 To what extent and how do pupils benefit from being able to take vocational or applied qualifications in secondary schools alongside more academically focused GCSEs?

secondary - benefit from vocational qualifications:

It is essential that vocational courses are offered to young people as alternative to more traditional academic routes.

Vocational courses offer a change for students to study academic routes with real - world, hands on experience in industry. The engineering sector needs more young people to join its workforce and for many more young people to leave education with the right knowledge and skills to progress to skilled employment, apprenticeships or further study in the areas of greatest workforce need.

34 To what extent does the current pre-16 vocational offer equip pupils with the necessary knowledge and skills and prepare them for further study options, including 16-19 technical pathways and/or A levels? Could the pre-16 vocational offer be improved?

vocational offer - equip for further study and improvement suggestions:

Pre-16 vocational offer doesn't prepare students well enough with the knowledge and skills to prepare them for future study options.

Careers education in the UK is not same in every school. The current curriculum does not allow for much scheduled timetable time, and often careers fairs/ careers talks are adhoc events. These events are also subject to location of the schools and the connections they have with industry in the local area, who are able to interact with students to showcase the careers/ skills required in the local area.

Teacher training is also a cause for concern as many teachers feel ill-equipped to deliver these session. However intervention from careers and enterprise company via careers hubs has helped to bridge the gaps but there is still a long way to go.

More could be done via the new skills England and the careers hub to bridge the gap between local industries and educational institutions to allow for access to careers events/ experiences.

Section 7: Assessment and accountability

35 Is the volume of statutory assessment at key stage 1 and 2 right for the purposes set out above?

volume of assessment at key stage 1 and 2:

The removal of science at key stage 2 has meant some school's have prioritised focusing on math and English.

This is something that should be re-thought to ensure science is also seen as valued and something that schools need to test aptitude without creating more pressure or exam stress for schools and young people.

36 Are there any changes that could be made to improve efficacy without having a negative impact on pupils' learning or the wider education system?

key stage 1 and 2 assessment improvements:

37 Are there other changes to the statutory assessment system at key stages 1 and 2 that could be made to improve pupils' experience of assessment, without having a negative impact on either pupils' learning or the wider education system?

key stage 1 and 2 assessment improvements to experience:

38 What can we do to ensure the assessment system at key stages 1 and 2 works well for all learners, including learners in need of additional support in their education (for example SEND, disadvantage, EAL)?

key stage 1 and 2 assessment works for ALL learners:

Section 7: Assessment and accountability

39 Is the volume of assessment required for GCSEs right for the purposes set out above? Are there any changes that could be made without having a negative impact on either pupils' learning or the wider education system?

volume of assessment at GCSEs:

40 What more can we do to ensure that: a) the assessment requirements for GCSEs capture and support the development of knowledge and skills of every young person; and b) young people's wellbeing is effectively considered when assessments are developed, giving pupils the best chance to show what they can do to support their progression?

GCSE assessments - support development of knowledge and skills and considers wellbeing:

41 Are there particular GCSE subjects where changes could be made to the qualification content and/or assessment that would be beneficial for pupils' learning?

changes to GCSE qualification content or assessment:

Section 7: Assessment and accountability

42 Are there ways in which we could support improvement in pupil progress and outcomes at key stage 3?

support pupil progress and outcomes at key stage 3:

43 Are there ways in which we could support pupils who do not meet the expected standard at key stage 2?

support pupils who do not meet expected standard at key stage 2:

Section 7: Assessment and accountability

44 To what extent, and in what ways, does the accountability system influence curriculum and assessment decisions in schools and colleges?

accountability system influence curriculum and assessment decisions:

A significant factor affecting the profile and uptake of D&T (and by proxy engineering) is its perceived low value in secondary school accountability measures. This means certain subjects are deemed as non- essential by schools so they will not teach them , thus limiting the idea of broad and balanced curriculum as it will depend what school you go to and how and what you will learn.

45 How well does the current accountability system support and recognise progress for all pupils and learners? What works well and what could be improved?

accountability system support and recognise progress for ALL pupils:

46 Should there be any changes to the current accountability system in order to better support progress and incentivise inclusion for young people with SEND and/or from socioeconomically disadvantaged backgrounds? If so, what should those changes be?

accountability system changes to support SEND or socio-economically disadvantaged:

Section 8: Qualification pathways 16-19

47 To what extent does the range of programmes and qualifications on offer at each level meet the needs and aspirations of learners?a) Level 3 b) Level 2c) Level 1 and entry level

extent to which programmes and qualifications meet needs and aspirations of learners:

48 Are there particular changes that could be made to the following programmes and qualifications, and/or their assessment that would be beneficial to learners:a) AS/A level qualificationsb) T Level and T Level Foundation Year programmesc) Other applied or vocational qualifications at level 3d) Other applied or vocational qualifications at level 2 and below changes to programmes and qualifications:

More work is also needed to ensure T Level education across the UK is equitable regardless of location. As raised in Ofsted's thematic review last July, they have varied levels of success across the UK and the quality of industry placements varies considerably across providers.

This is partly due to the location of providers and a lack of overall strategy to engage industry with the skills and education agenda. As referenced by the education committee's report The future of post-16 qualification "regional variations in economic activity are limiting factors in students' access to T Level courses and placements, as many industries, such as engineering or media and creative arts, are concentrated in larger cities".

This remains a real issue and has not been addressed in this latest announcement. It risks undermining the government's levelling up agenda. Again, this links back to raising the profile of T Levels and the benefits that they can have on regional skill demands in local areas.

49 How can we improve learners' understanding of how the different programmes and qualifications on offer will prepare them for university, employment (including apprenticeships) and/or further technical study?

improve understanding on how programmes and qualificatoins will prepare them for future:

We need to make sure they receive the same respect and prestige as academic routes and are presented as a worthwhile options.

The vocational route holds no lesser value than other traditional academic routes and should be considered as equal. We need schools, parents and businesses to collectively push this message to encourage uptake.

50 To what extent is there enough scope and flexibility in the system to support learners who may need to change course?

scope and flexibility to support learners changing course:

51 Are there additional skills, subjects, or experiences that all learners should develop or study during 16-19 education, regardless of their chosen programmes and qualifications, to support them to be prepared for life and work?

skills, subjects or experiences that all learners should develop or study during 16-19:

Section 9: Other issues on which we would welcome views

52 How can the curriculum, assessment and wraparound support better enable transitions between key stages to ensure continuous learning and support attainment?

wraparound support enabling transitions between key stages:

Section 9: Other issues on which we would welcome views

53 How could technology be used to improve how we deliver the curriculum, assessment and qualifications in England?

how can technology be used to improve delivery of curriculum, assessment and qualifications :

More needs to be done to ensure schools have the necessary infrastructure - such as access to wifi, teachers have access to laptops and so do students.

AI should also not be seen as something scary and detrimental to schools. AI could be helpful for teachers to plan lessons - a resource centre should be step up where AI can pull from resources in the UK. There is

number of STEM resources available for teachers to use across the UK with ready made lesson plans. Many teachers do not know they exists or that they are curriculum linked.

A module should also be developed to teach young people about the good use of AI and it's limitations. AI is not going anywhere, and should be seen in a positive light such as explaining how generative AI has it's limitations and is based on data sets it pulls from.

Section 9: Other issues on which we would welcome views

54 Do you have any further views on anything else associated with the Curriculum and Assessment Review not covered in the questions throughout the call for evidence?

Any further views: