



Department
for Education

Consultation Response Form

Consultation closing date: 26 August 2015
Your comments must reach us by that date

Design and Technology GCSE

If you would prefer to respond online to this consultation please use the following link: <https://www.education.gov.uk/consultations>

Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information regimes, primarily the Freedom of Information Act 2000 and the Data Protection Act 1998.

If you want all, or any part, of your response to be treated as confidential, please explain why you consider it to be confidential.

If a request for disclosure of the information you have provided is received, your explanation about why you consider it to be confidential will be taken into account, but no assurance can be given that confidentiality can be maintained. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

The Department will process your personal data (name and address and any other identifying material) in accordance with the Data Protection Act 1998, and in the majority of circumstances, this will mean that your personal data will not be disclosed to third parties.

Please tick if you want us to keep your response confidential.	<input type="checkbox"/>
Reason for confidentiality:	

Name: Claire Donovan	
Please tick if you are responding on behalf of your organisation.	<input checked="" type="checkbox"/>
Name of Organisation (if applicable): Engineering the Future/Education for Engineering	
Address: c/o The Royal Academy of Engineering 3-4 Carlton House Terrace London SW1Y 5DG	

If your enquiry is related to the DfE e-consultation website or the consultation process in general, you can contact Aileen Shaw in the Ministerial and Public Communications Division by e-mail: consultation.unit@education.gsi.gov.uk or by telephone: 0370 000 2288 or via the Department's ['Contact Us'](#) page.

Please insert an 'x' into one of the following boxes which best describes you as a respondent.

<input type="checkbox"/>	Teacher	<input type="checkbox"/>	Parent	<input type="checkbox"/>	School
<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>	College	<input type="checkbox"/>	Subject Association
<input type="checkbox"/>	Young Person	<input type="checkbox"/>	Higher Education Establishment	<input type="checkbox"/>	Further Education Establishment
<input type="checkbox"/>	Academy	<input type="checkbox"/>	Employer / Business Sector	<input type="checkbox"/>	Local Authority
<input type="checkbox"/>	Teacher	<input type="checkbox"/>	Awarding Organisation	<input type="checkbox"/>	Organisation representing school teachers and lecturers

Please Specify:

Engineering the Future (EtF) is an alliance of professional engineering institutions and national organisations that between them represent 450,000 professional engineers and technicians.

Education for Engineering (E4E) is part of *Engineering the Future*, and is the body through which the engineering profession offers coordinated advice on education and skills policy to UK Government and the devolved Assemblies. It deals with all aspects of learning that underpin engineering.

1. Is the revised GCSE content in design and technology appropriate? Please consider:
 - whether there is a suitable level of challenge

Comments:

The Design & Technology Association (DATA) is a member of E4E, and we support their submission to this consultation. In our response, we have drawn out the particular aspects which resonate with the engineering profession, as being of vital importance to the formation and inspiration of future engineers at GCSE level.

In general, EtF/E4E is happy with the level of challenge proposed. Schools and other providers inevitably have to balance the aspiration of students with their abilities, but a firm foundation in principles, combined with the contextual challenge and project design brief activities, will enable students to build the right strengths and understanding.

Is the revised GCSE content in design and technology appropriate? Please consider:

- whether the content reflects what students need to know in order to progress to further academic and vocational education

Comments:

We are concerned that school-based qualifications are increasingly focused on the academic approach to subjects. This makes it increasingly difficult for students to choose the most appropriate progression pathway. We would like to see a statement about the importance of the qualification delivering the understanding (if not the experience) of careers which can come from the study of design & technology.

Apprenticeships are particularly suitable for students on completion of their GCSEs, but this question does not include consideration of progression through the work-based route. Without the inclusion of practical 'hand skills' or similar, this GCSE will be no more suitable for progression to an engineering apprenticeship than many others.

The engineering profession is one populated by problem-solvers and adapters. The Royal Academy of Engineering's report on *Thinking Like an Engineer* identified the following 'habits of mind' which engineers use: systems thinking, adapting, problem finding, creative problem solving, visualising, and improving. These are bound within wider learning habits of mind: open-mindedness, resilience, resourcefulness, collaboration, reflection, ethical consideration, and curiosity. We mention these here because, if D&T GCSE is to contribute to the formation of engineers at a young age, it needs to enhance and encourage these habits. While this also needs to be done through the teaching methodology and classroom delivery mechanisms, the content needs to give teachers the opportunity to explore these habits.

Engineers are also often required to use skills and knowledge across a number of disciplines and contexts. As described by DATA, the GCSE should teach how design and make solutions need to come from the problem, not the preference/particular expertise of the problem solver. 'Creative problem solving' as a habit of mind means more than analysing a problem for answers you already know. It means digging into the true causes and components, and being open to solutions which are outside your immediate sphere of current knowledge and comfort.

Subject content

The proposed content is largely suitable (we note and endorse DATA's suggestions re clarification in the definitions of prototype and product), with the additional observation that 'risk' is an essential component for students to understand in this subject at this level.

Engineers are constantly having to assess and monitor risk in their work. The ability to manage this element of their work is essential, and the GCSE D&T can provide a real opportunity for them to develop these skills, provided the content and assessment is able to encompass a certain level of uncertainty. The design and make process is highly iterative, some solutions must be tried before being a judgement on the best can be made. We want students to enjoy and explore this process in GCSE D&T, and be able to gain good grades where they can demonstrate good risk management and good judgement in problem solving. The engineering habits of mind can be instilled at this level if students are encouraged to improve, adapt, and experiment during the process.

Technical knowledge and understanding

The inclusion of the requirement relating to the use of electronic systems and the use of programmable components is particularly welcome, for a number of reasons.

a) Many disciplines in the modern engineering profession require an understanding of electronics and systems. Everything from acoustics to energy, from nuclear to aerospace contains elements requiring systems thinking and computer programming.

b) We hope that the new computing curriculum at Key Stages 1-4 will increase both interest and ability in computer science. It should also increase students' understanding of how it complements other subjects, such as D&T.

Is the revised GCSE content in design and technology appropriate? Please consider:

- whether the amount of content in the qualification is appropriate and, if not, whether you have any suggestions for removing or adding content

Comments:

Again, we endorse DATA's specific views on this, and would like to highlight two aspects:

a) Project management and planning is a key, and potentially enjoyable, aspect of design & technology. We would welcome an additional statement which recognises this.

b) The lists of examples of how D&T links to maths and science are potentially restrictive. While we appreciate that the document is trying to show the breadth of possible interaction, we support DATA's view that a more general statement would be appropriate.

We would also like to add consideration of the vital importance of workshop time within the D&T curriculum. Engineers are concerned that schools are closing down workshops as they need to use the space for classrooms and/or they are too expensive to run. However, workshop experience is vital in engaging students and preparing them for a life in engineering practice.

Equalities Impact

In accordance with the Equality Act 2010, public bodies must have "due regard", when making decisions, to the need to eliminate discrimination, harassment, victimisation; advance equality of opportunity; and foster good relations, in relation to relevant protected characteristics. It would therefore be very helpful to understand if, in your view, there is any potential for the subject content to have a disproportionate impact upon any student with relevant protected characteristics under the Equality Act 2010. It would be particularly helpful to understand if any respondents have evidence to support concerns they may have about such impacts.

1. Do you think that the proposal has the potential to have a disproportionate impact, positive or negative, on specific students, in particular those with 'relevant protected characteristics'? (The relevant protected characteristics are disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex and sexual orientation.) Please provide evidence to support your response.

Comments:

We very much hope that the current gender distribution of the GCSE will be improved by the proposed arrangements. We want students to see how the principles of design and technology are consistent across different materials, and to enjoy learning about their use a wide range of contexts.

One interesting aspect of our consideration of equality impact has been around age. The engineering profession is very keen to encourage people to 'move across' into engineering from related careers, at a later stage in their lives. The current GCSE in D&T has very small numbers of adults studying it, and the question was raised as to whether the new version might be more attractive to adults studying part time. Would it provide adults with both the ability and desire to continue to study technical subjects, enabling them to take up a career in engineering? The professional engineering institutions are currently actively considering how to increase the number and range of pathways into an engineering career, and they will look at the new GCSE as part of this.

2. How could any adverse impact be reduced and how could the subject content of the GCSE be altered to better advance equality of opportunity between persons who share a protected characteristic and those who do not share it? Please provide evidence to support your response.

Comments:

Thank you for taking the time to let us have your views. We do not intend to acknowledge individual responses unless you place an 'X' in the box below.

Please acknowledge this reply.	X
E-mail address for acknowledgement: Claire.donovan@raeng.org.uk	

Here at the Department for Education we carry out our research on many different topics and consultations. As your views are valuable to us, please confirm below if you would be willing to be contacted again from time to time either for research or to send through consultation documents?

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
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All DfE public consultations are required to meet the Cabinet Office [Principles on Consultation](#)

The key Consultation Principles are:

- departments will follow a range of timescales rather than defaulting to a 12-week period, particularly where extensive engagement has occurred before
- departments will need to give more thought to how they engage with and use real discussion with affected parties and experts as well as the expertise of civil service learning to make well informed decisions
- departments should explain what responses they have received and how these have been used in formulating policy
- consultation should be 'digital by default', but other forms should be used where these are needed to reach the groups affected by a policy
- the principles of the Compact between government and the voluntary and community sector will continue to be respected.

If you have any comments on how DfE consultations are conducted, please email: consultation.unit@education.gsi.gov.uk

Thank you for taking time to respond to this consultation.

Completed responses should be sent to the address shown below by 26 August 2015

Send by post to: Alex Smith, 2nd floor, DfE, Great Smith Street, London, SW1P 3BT

Send by e-mail to: GCSEDesignTech.CONULTATION@education.gsi.gov.uk