

DESIGN AND TECHNOLOGY AS AN ENabler TO STEM

Design and Technology (D&T) is integral to the Science, Technology, Engineering and Maths agenda, playing a fundamental role in developing skills required for other subjects such as engineering and medicine. D&T helps develop transferable skills like creative thinking and manual dexterity.

Recent reports by the Edge Foundation,⁴ the Institute of Civil Engineers, and the Creative Industries Federation⁵ have all highlighted the benefits of the subject to students who go on to take advanced engineering and science degrees. Manual dexterity is one area that is increasingly valued by medical schools and engineering developments, for example in robotic surgery.

MAINTAINING COMPETITIVE ADVANTAGE THROUGH DESIGN SKILLS

For Britain to have competitive advantage through design - vital to the success of the post-Brexit economy - then it is crucial for institutions across the entire skills pipeline to develop and strengthen links. Participants in the research behind this report highlighted

a pressing need for universities and schools to develop new links with businesses and design firms. Positive engagement between educational institutions and industry is vital to ensuring that people entering design and engineering are equipped with the knowledge that these evolving sectors require.

The Design Council found that over half of professionals within the sector expect the demand for design skills to increase in the next three years alone.⁸ By allowing teachers access to businesses, improving careers advice, promoting vocational qualifications, and improving outreach to underrepresented groups in the industry, design training can become more adaptive to these industry changes and more relevant to students and industry alike to rise to demand.

There is opportunity to move to a STEAM (Science, Technology, Engineering, Arts and Maths) agenda that calls for a rethink on how all subjects are taught. Britain's physicists, engineers and chemists would all benefit from access to creative subjects that foster intuition. By adopting a more holistic approach to the primary and secondary level curricula, Britain can be assured of an adaptive, resourceful and productive workforce, able to meet the challenges of the future with a creative and analytical mind-set.

ABOUT THE SPONSORS

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APDIG

The All-Party Parliamentary Design and Innovation Group is a cross-party coalition of Parliamentarians and design sector organisations that work to develop new design policy ideas, critique existing government decision-making around design, communicate within Parliament the enormous potential value of design, and help the design community better engage with the policy process. It is part of Policy Connect

policyconnect.org.uk/apdig

DESIGN BUSINESS ASSOCIATION

The DBA champions the transformative power of design, promoting its strategic and economic value to business and government. As the industry's trade association, we represent a vibrant community of design consultancies and design-driven businesses. Together we are the collective voice for design and the global leader on design effectiveness.

www.dba.org.uk

DESIGN AND TECHNOLOGY ASSOCIATION

The Design and Technology Association leads high quality design, engineering and technology education. We are a membership organisation providing advice, support and training for those involved in teaching design, engineering and technology. We work closely with government, awarding bodies, Ofsted and other regulators, advising on the curriculum and lobbying on behalf of the subject. We also work with employers and corporate partners to help promote the value of the subject and the range of careers and opportunities to which it can lead. We specialise in developing links between education and industry to mutual benefit.

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All-Party Parliamentary
design&innovation
Group

DESIGN INNOVATION

DESIGN SKILLS AND UK'S INDUSTRIAL STRATEGY

dba **D&T** the design and technology association

A report by the All-Party Parliamentary Design and Innovation Group, Design Business Association and Design and Technology Association

⁴ Edge Foundation, 14-19 Education: A New Baccalaureate, 2016

⁵ Creative Industries Federation, Creative Education Agenda, March 2017

⁶ Design Week, Design being "squeezed out" of state schools, says V&A director Tristram Hunt, 18th July 2018

⁷ Times Education Supplement, A-level results: Stem entries on the rise, 16th August 2018

⁸ Design Council: The Design Economy, July 2018, pg, 31

OVERVIEW

The All-Party Parliamentary Design and Innovation Group (APDIG) - with the support of the Design Business Association (DBA) and the Design and Technology Association - is setting out a vision for how design thinking and skills can be embedded into education. By equipping the workers of the future with the ability to think creatively and approach problems from a design perspective, the UK can build on the high growth rate of the design sector. With such policies at the forefront of the educational and industrial agenda, the UK can confidently face the challenges of automation and digitisation: the Fourth Industrial Revolution.

FUTURE IMPERFECT

Design is a British success story. Research by the Design Council found that in 2016 the sector was worth £85.2 billion in gross value added (GVA) to the UK. It outpaced the general economic growth rate, enjoying an annual growth rate of 6 percent since 2014, two points above the economy-wide average. Designers are also 29% more productive than the average UK worker.¹ This growth has been driven by newly formed SMEs and microbusinesses. In 2016, one in three design roles were digital.²

In the next 10 years, the UK will face a number of challenges and opportunities with the advent, commercialisation and adoption of new technologies. They will

transform the way we live and work and the need to learn new skills and re-training for jobs that are yet to be created will become part of a typical career path.

To compete globally, countries will have to capitalise on their strengths in an automated global economy; for the UK one of these strengths is design.

A 2015 report by Nesta noted that “crucially, for both the UK and the US, none of the jobs at all in the highly creative category (including design) are at high risk of automation.”³

To compete outside the EU the UK will need to capitalise on its strengths in an automated global economy. Our design sector strength

RECOMMENDATIONS FOR GOVERNMENT

Alongside the Apprenticeship Levy, the government should allow firms that engage with universities and colleges - by providing speakers, guest lecturers and work placements - to claim tax relief.

This would help firms in the sector to expand, increasing employment and allowing for the provision of more apprenticeships and Year-in-Industry courses.

Introduce a design-focused research and development tax credit to encourage investment in design and design skills

Trial and error is a fundamental aspect to the design process, but the cost is a barrier. The government should extend the remit of the successful Research and Development Tax Credit to all firms that use design to achieve productivity increases and workforce expansion

RECOMMENDATIONS FOR GOVERNMENT AND THE EDUCATION SECTOR

Incorporate design thinking into other subjects

Design is a way of looking at problems and finding solutions; the Government should incorporate it into all other subjects - ranging from programming to ethics.

Include creative subjects as a core subject in the English Baccalaureate

The government needs to acknowledge the importance of design and technology to the wider skills pipeline. The EBacc should require a creative subject, to ensure that all children are introduced to humanities, natural sciences and creativity.

Increase the diversity of the workforce by promoting design education amongst minority and underrepresented groups

The exclusion of creative subjects from the EBacc has reversed years of improved participation by under-represented and low-income students in the design industry. Government and educational establishments should work to improve the attractiveness of the sector to minority groups to ensure that design exploits the creativity of our diverse Britain.

Encourage access to design and craft training through training programmes and careers information, guidance and advice

Design thinking and craft is vital across all professions. Training programmes and careers information, guidance and advice should incorporate these to a far greater extent.

Ensure that T-Levels meet the standards required by industry

T-Levels have the potential to transform how people enter the design sector, increasing participation from under-represented and low-income students. However, as design and manufacturing becomes increasingly focused on new and emerging technologies, it is vital that vocational qualifications are treated as equal partners to traditional A-Levels. Students embarking on this pathway must be given the training and education required to achieve the careers they aspire to.

RECOMMENDATIONS FOR INDUSTRY AND THE EDUCATION SECTOR

Promote training and knowledge sharing between higher education, further education and industry bodies

Design is an industry of collaboration - however, many academics and industry members agreed there is disconnect between the demands of industry and the

content of university courses. The sectors should develop better links, engagement and figureheads/case studies to give students a clearer pathway into industry.

Offer summer placements to design firms for teachers

Teachers benefit from practical observations of how the design sector works. Firms could showcase new and emerging developments in industry to schools, helping to inspire lesson plans that include the most recent developments in the sector. The Sorrell Foundation has trialled the benefits of this in the summer of 2018 with a small pilot,

supported by Design Business Association and Design & Technology Association.

Develop a taskforce of design advocates to promote the value of design across the country

Designers play a central role in the manufacturing and digital sectors but their contribution is ignored by both the mass media and policy makers. The industry should create a network of designers to inform the wider community of the importance of design, raising the profile of the sector and its attractiveness as a career.

SKILLS AND THE INDUSTRIAL STRATEGY - DESIGN IS CRITICAL TO ITS SUCCESS

The Grand Challenges noted by the Government's Industrial Strategy recognise the need for creative thinking and a design-led approach to research and development.

Design must be used to help the UK adapt to the contemporary pressures of:

1
Furthering sustainable growth

2
Envisioning the future of mobility

3
Working with and commercialising artificial intelligence and big data

Without designers involved in tackling these pressures, the UK's future competitiveness and economic resilience is at risk. It is imperative that Britain's design sector, with its global reputation, has access to the best domestic talent.

Embedding design at the heart of education is vital to encouraging Britain's creative talent to follow this career path and unleash their potential in the businesses of tomorrow to solve grand challenges.

The APDIG worked with the DBA and D&T Association during spring and summer of 2018 to engage professionals from across the design sector. Over a number of roundtables, with leading figures from industry, academia and the wider design community, stakeholders discussed how effectively the education system - from primary to university level - provides students with the skills required to approach design problems and creative thinking to meet needs in the Industrial Strategy. This paper sets out the findings and recommendations from these discussions that aim to support the government's Industrial Strategy and utilise the benefits of design to benefit education and training programmes.

¹ Design Council: The Design Economy, July 2018, pgs, 11-12

² Design Council: The Design Economy, July 2018, pg, 13

³ NESTA: Creativity vs Robots, 2015, pg. 15