



Chapter 6

Research, Education and Skills for Digital Britain

"...Used well, technology strongly develops the study and learning skills children need now and in the future, including the fundamentals of "e-safety"...Even now, a reasonable grasp of ICT is needed in education and employment, and it will become increasingly important to command ICT skills to prepare for technologies of the future. The foundations for this engagement are best formed in primary schools, where children's enthusiasm for ICT is evident. ...We must avoid raising a population divided between ICT "haves" and "have nots" because this would pose a considerable threat to both economic wellbeing and social cohesion..."

Sir Jim Rose

AMBITION: TO MAKE THE UK A WORLD LEADER IN RESEARCH, INNOVATION, TECHNOLOGY AND CREATIVITY, BY INSPIRING THE NEXT GENERATION AND CREATING THE ENVIRONMENT FOR DIGITAL TALENT TO THRIVE

Building the foundations of our competitiveness in the Digital Economy

1. Our society and our economy are being transformed by the development and use of innovative digital technologies. 55% of current UK GVA comes from technology-intensive sectors,²⁷ and over the next 5 to 7 years these sectors could contribute a further £35bn to GVA.²⁸
2. This further growth is dependent on research and innovation. And it is dependent on our having enough people with the right skills, in the right place, at the right time to develop, apply and maximise the impact of those new technologies for our economy.

²⁷ Office of National Statistics: Change in GVA by industry

²⁸ IT and Telecoms Insights 2008: the impact of ICT on productivity, e-skills UK/Adroit Economics and Regeneris Consulting.



3. In “New Industry, New Jobs”, Government described the importance of building on the foundations of Britain’s competitiveness to ensure British businesses are able to access growing global markets. Investment in innovation, research and skills is at the heart of this new industrial policy. Through a new activism we will focus our skills system, the knowledge in our universities and the way we support research through our record investment in science and our burgeoning support of innovation in creativity to meet the demands of sectors such as Digital Britain that are vital for the future economy. And we will use these levers more strategically to meet the demands and opportunities Government creates in making key decisions, buying goods and services and regulating industry.
4. In this chapter, we describe how the UK can turn its excellence in science, research and technology into innovation so we can create and take advantage of new opportunities within the digital economy. We also describe how we will develop the talented workforce necessary for UK businesses to succeed.

Research

5. Many UK companies are already well positioned to benefit from Digital Britain. The UK has strengths in wireless technologies and optoelectronics. CSR is the world leader in Bluetooth and chips designed by ARM are in most mobiles sold globally. It is at the forefront of emerging technologies such as plastic electronics and femtocells. We need to continue to invest in research and innovation to keep pace with fast moving technological change and to enable new companies to be created. We also need to ensure companies have the high level skills needed to exploit the opportunities of Digital Britain.
6. The Research and Development (R&D) tax credit schemes offer significant support for R&D through the tax system, including software directly employed in R&D. Under the SME scheme companies may deduct 175% of qualifying costs on R&D from income when calculating their profits for tax purposes (130% for large companies) and losses may be cashed in with HM Revenue and Customs. The latest national statistics show the success of the schemes. Over 36,000 claims had been made by 2006-07, with over £2.8 billion of relief claimed. It is estimated that around £50m of tax credit support is claimed annually by companies in the software consultancy and supply sector.
7. The UK has a world-leading research base, funded principally through the Research Councils. The co-ordinated, multidisciplinary **Digital Economy Programme will in its first three years invest £120m in new research and training to prepare the country for the next 20 years of digital evolution. This includes three new research hubs, launched in 2009 with funding of £12m each, whose research programmes address the core issues facing Digital Britain.**



Nottingham: the digital economy and ubiquitous computing

As people search the Internet, access services and engage in online transactions, they leave a digital trace which can be used to target services and resources and to provide market intelligence. This is now extending to include information about people's interactions with the surrounding environment: positioning technologies allow us to locate and track the movements of people and resources, whilst video systems allow us to capture how people move in shopping centres and through parks. With mobile phones and portable devices, we can then localise people's access to services in a way never possible before. Understanding the nature of this growing record of human activity and developing new socially acceptable ways to exploit it offers transformative opportunities for a future Digital Economy.

Newcastle/Dundee: the digital economy and social inclusion

Due to the close link between Social and Digital Exclusion, as more services are delivered online, there is a real danger that those who lack access to technology, or who struggle to use it, will fall further behind. However, there is also the potential for the digital economy to transform the lives of the excluded. A multi-disciplinary team, with expertise ranging across technology, business, society, homecare, transport and the creative arts, will identify why groups of people are excluded, and show how the digital economy can have a positive impact on them. Focusing on three important groups – older people, people with disabilities and disaffected youth – it will, for example, explore how sensor-based systems can help people with dementia to live safely for longer in their own homes, by prompting them through everyday tasks. The benefits will be felt not only by the individuals affected, but also by the UK economy, and by those working to maximise the impact of future policy.

Aberdeen: the digital economy and rural UK

In rural UK, sparser populations, greater distances, and lack of critical mass affect social and economic inclusion and business activity. The low penetration and high costs of digital access, compared with urban areas, present challenges for the harnessing of untapped rural economic and social potential. One opportunity, with high potential impact in the transport and mobility area, is to augment existing travel information by real-time 'travel markets' to improve the efficiency and availability of flexible transport solutions and to encourage modal shift from car use.



8. The Research Councils are also developing the UK skills base with an investment of £34m in seven Doctoral Training Centres, where PhD-level research is combined with taught modules to create a new generation of knowledge leaders for Digital Britain.
9. Coupling this research excellence with the Government's agenda for industrial activism ensures that new thinking and new technologies are exploited to create sustainable and profitable new business models. The Technology Strategy Board has been set up to encourage innovation for wealth creation and quality of life, and is endowed with a cross-governmental leadership role to achieve this.
10. The Government has assigned to the Technology Strategy Board the role of championing and leading the public technology and innovation efforts required to realise Digital Britain. This will involve investing with businesses, and coordinating activities with those being pursued by the Research Councils, NESTA, regional agencies and others, as well as engaging with the various departments of Government that have an influence on the digital agenda or who wish to deliver services through digital means.
11. Digital Britain reaches beyond media and communications to penetrate into many market sectors. There is already active Government support for communications-enabled innovation across this space:
 - **Creative Industries:** Accessing and commercialising content in a digitally networked world
 - **Health:** e.g. Assisted Living, Informatics
 - **Transport:** Intelligent transport systems and services
 - **Energy and built environment:** Smart grid and smart meters (DECC) and smart homes
 - **Education:** Social inclusion.
12. **The Technology Strategy Board have assigned an initial budget of £30m, to advance this Digital Britain-related innovation.** The digital infrastructure of the future comprises the "pipes" that deliver information, alongside the tools and services that enable users to extract value from it. As the economics of Digital Britain evolve, the following three areas need to be addressed through innovation in business models, technology and use:

ECONOMICS OF THE NETWORK

13. It will soon not be possible to run a business effectively unless it is equipped with high-bandwidth access to the Internet. These are the roads of the 21st Century, and alongside a public service requirement for universal access, the UK Government must seek next generation access that is scalable to 1Gb/s and beyond. Internet traffic is doubling every 21 months, and South Korea will be responding this by rolling out 1Gbps Internet in 2012-13. To make a similar investment cost-effective in the UK, we need to reduce the cost of deployment



and to create a commercial environment in which investment results in a shorter pay-back time.

14. Access to the home is required; businesses will increasingly be operated from the home, and commercial services to the home are likely to drive network revenues for the foreseeable future. The Technology Strategy Board will encourage technology development for ultra-fast broadband, and look for more cost-effective ways to deploy new infrastructure “pipes” whilst maximising the efficiency with which existing infrastructure is used. It is already investing in Next Generation Access infrastructure technology, with £1m of feasibility studies in progress to enable an anticipated €7.5m of investment with UK business in a the European ERANET+ (PIANO+) Photonics 21 programme in 2010.

ECONOMICS OF CONTENT AND SERVICES

15. The digital economy is changing the nature of business, so business models need to adapt to remain competitive. New methods to extract revenue from content and services are needed, in a world where direct communication between users allows copyright protection to be bypassed and content to move without central control. We need a better understanding of how to make infrastructure both resilient and intelligent, and make business models sustainable, so as to bring benefits to business, individual users, network operators, and the providers of content and services. The Technology Strategy Board will encourage innovation to make digital infrastructure more content- and context-aware, and develop digital test-beds, where businesses and users can explore the effects of alternative operating models, e.g. controlled suspension of copyright protection, new advertising and charging models.

USER PROTECTION AND EMPOWERMENT

16. As digital services are delivered through these new means, there is a continual need for new thinking about security, privacy and usability, and to ensure that these are designed into the system from the start. New technologies are needed to ensure that the system can be used with confidence and trust, and to help the user extract useful information from a deluge of data. To achieve this, we need to ensure that communications channels and services adapt in response to individual users’ requirements. The Technology Strategy Board will encourage technology development in intelligent systems for management of data and services, including new and more responsive interfaces, and will assess user satisfaction with the results.
17. These initiatives will adopt a holistic, integrative approach to the challenges, coordinating across Government and with business, and bringing together interests from throughout the value chain to agree ways forward.



SKILLS FOR A DIGITAL BRITAIN

18. Of the UK's working age population, 5% already work in the digital technology sector. To support the further growth of the sector, we need to tackle the skills gaps that currently exist in the sector and support the 130,000 new entrants that will be required each year for the next decade – working in increasingly highly skilled, complex and senior roles.²⁹ For the digital media sector, it is estimated that a further 84,000 people will be required by 2017.³⁰
19. Half of employers in the digital media sector and one in five in the digital technology sector report skills gaps. Over 20% of companies trying to recruit digital technology professionals report difficulties in attracting applicants with the right skills, and 92% of these companies report a negative impact on their company's business as a result.³¹
20. To achieve the supply of the high quality professionals that can build Digital Britain we need to equip this workforce with contemporary hybrid skills in specific digital technologies. The IT professional workforce, alone, in the UK has almost doubled in the last 12 years: from 550,000 to around one million today, and is forecast to grow strongly over the coming decade. But to achieve sustainable economic performance we need to go further by ensuring we also have a greater capability in, and engagement with, the 'hard' subjects that underpin technological innovation – computer science, mathematics and the physical sciences – and with the skills of our world class creative industries which can then adopt, innovate and exploit these technologies for economic benefit. This means overcoming some long standing and deep-seated challenges: the decline in our national engagement with hard sciences; our tendency to set up divisions at an early age between technology and creativity and between both sectors and business.
21. Following the publication of the Interim Digital Britain Report, the Government asked the two Sector Skills Councils (SSCs) covering digital sectors, e-skills UK and Skillset, to submit a detailed report on the skills issues associated with the future growth of the digital sectors, including recommendations for action to address those skills needs. Their report, Digital Britain: creating the skills for the Digital Economy,³² highlighted the importance of: ensuring a healthy pipeline of talent into the workforce of the digital sectors; supporting the expansion of entry-level employment opportunities in the digital sectors; and, accelerating the development of the skills of the existing workforce.
22. The Government acknowledges the SSCs' clear articulation of the challenges facing the digital sectors, and is committed to playing its part in addressing these skills challenges ensuring that the skills of the workforce as a whole

29 Digital Britain: creating the skills for the Digital Economy, e-skills UK and Skillset, 2009.

30 Figures based on data published in 'Working Futures 2007-2017' and in 'Creative Industries Economic Estimates Statistical Bulletin' (DCMS)

31 Ibid.

32 http://www.culture.gov.uk/reference_library/publications/6071.aspx



compare with the best in the world, and ensuring that we have the skills we need to succeed in the digital economy.

23. The analysis and recommendations in the SSCs' report has informed the development of policy and action as set out in this chapter – and in the forthcoming Higher Education Framework and Active Skills papers.
24. The skills needed for Digital Britain are not just another 'vertical' subject area. They underpin everything we do in the 21st Century. 22 million employees use technology daily in the workforce. Successful, emerging economies have already embraced this message. So we need a step change in approach at all levels – in schools, vocational training, higher education and in the current workforce.
25. The *Leitch Review of Skills* worked closely with the Devolved Administrations in Scotland, Wales and Northern Ireland. The UK Commission for Employment and Skills was established to advise the Government on the policies, strategies, measures and targets needed to become one of the top eight countries in the OECD for skills, jobs and productivity.
26. The UK Government embraced the Leitch targets for England and the recommendations were converted into PSA targets for the current Comprehensive Spending Review period (to 2010-11), and for long-term targets to 2020 (whilst noting that the 2020 Leitch Ambition was very stretching).
27. In February 2009, the Scottish Government published an update to *Skills for Scotland: A Lifelong Skills Strategy* (www.scotland.gov.uk/skills). Significant developments have been made since the publication of the original strategy to address the challenges outlined in it, including in respect of skills utilisation.
28. In Northern Ireland, the Government had already broadly adopted similar aims to those outlined in the Leitch Review and is developing a detailed strategy to be published in 2009. However, it is worth noting that existing Northern Ireland targets do largely align with the Leitch Ambition over a 10 year timeframe (to 2015).
29. The Welsh Government published a new skills and employment strategy in June 2008: *Skills that Work for Wales*. It adopted the ambition to have a world class skills profile by 2020 and confirmed the existing number of short-term targets for qualification attainment by 2010.

Developing Digital Life Skills

30. In Chapter 2 we highlighted the importance of developing Digital Life Skills.
31. In an increasingly ICT-mediated society, digital life skills underpin both employability and social inclusion. Following publication of the Digital Britain Interim Report, John Denham, Secretary of State for Innovation, Universities and Skills commissioned Estelle Morris to undertake an Independent Review of



ICT User Skills. The review was asked to consider the extent to which the need for basic ICT skills is currently being met in England and the state of current provision, and to make recommendations for further action.

32. Estelle Morris' review:

- Adopts the term 'Digital Life Skills' to identify a set of basic ICT skills an adult requires to take their first steps online – *using a computer to safely enter, access and communicate information.*
- Reiterates the importance of the role that Digital Life Skills play in the health and wellbeing of UK citizens and the wider UK economy. In summary, Digital Life Skills have an impact on an adult's equality of access to information and services, employability, social inclusion, engagement in further learning, and also on wider business productivity.
- Finds that whilst the number of people who lack basic ICT skills has reduced, and will continue to reduce as result of existing policy initiatives and demographic change, a significant proportion of the 11.6 million adults who were regarded as digitally excluded in England in 2008 remain at risk of continuing exclusion, with the digital divide widening for those most at risk: those adults over 65, socially excluded, or with few or no qualifications.
- Concludes that despite a number of successful projects and initiatives, a more concerted approach is now needed to make provision available and ensure that adults can access the skills they need to get online.

33. The review's main recommendation is the development of a 'Digital Life Skills Entitlement' to enable adults without Digital Life Skills to:

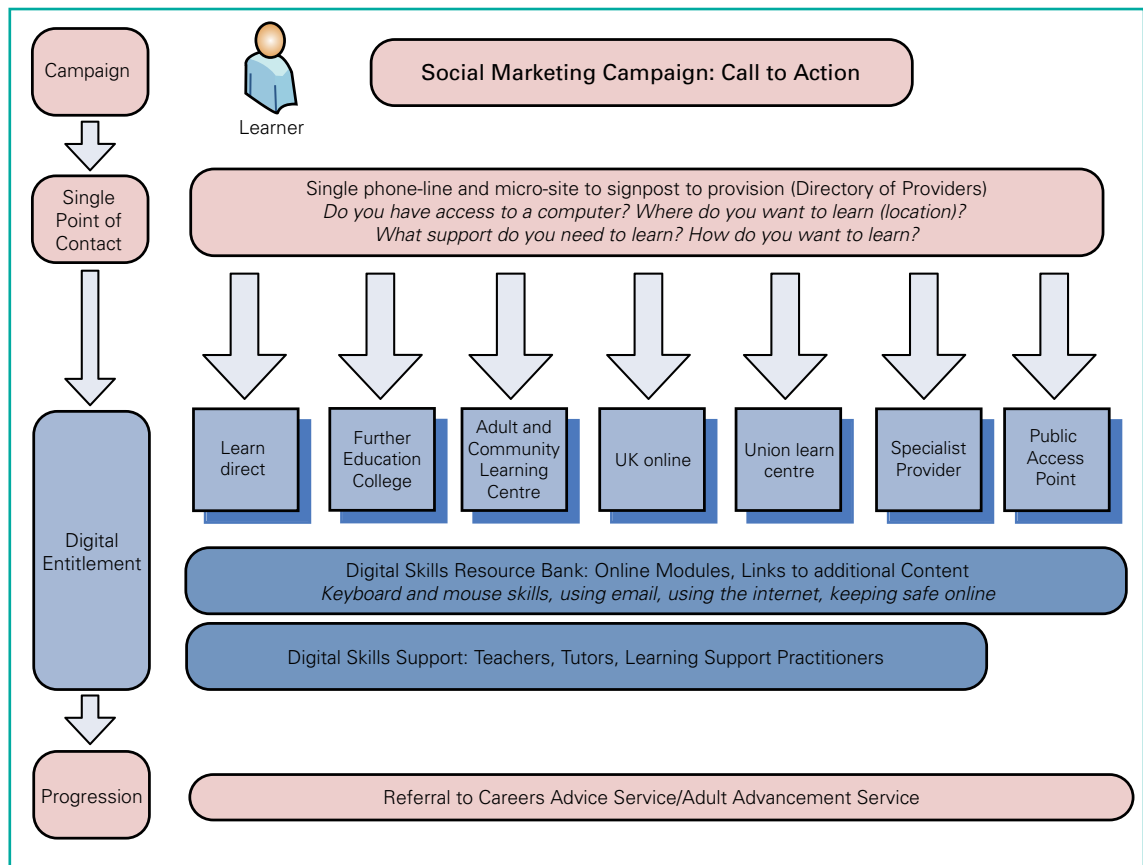
- Request up to nine hours to cover a core set of online learning modules, building on the 'myguide' service;
- Approach any learning provider in the scheme and receive support to learn the basic skills they need to get online – through a UK online centre, Adult and Community Learning Provider, FE College, learndirect, a Unionlearn Centre or other approved provider; and,
- Access to a single helpline and website will be provided with online learning modules and links to a range of free resources, provided and supported by broadcasters and other commercial suppliers.

Figure 7 illustrates how such an Entitlement might work in the current skills landscape.

34. The Government welcomes the recommendations of the Estelle Morris review. The development of the Entitlement could provide one of the foundations for digital participation and for the employability skills required throughout the future workforce. BIS will work with other Government departments to take forward these recommendations.



Figure 7: Digital Life Skills Entitlement



DIGITAL EDUCATION – ENSURING THERE IS A HEALTHY PIPELINE OF TALENT

- 35. In response to the needs of employers, Government is striving to develop a national curriculum that offers seamless opportunities in digital competencies from entry-level school age through to Further Education (FE) and Higher Education (HE), to equip the future workforce with relevant digital skills to succeed.
- 36. The Government’s endorsement of the Rose Review of the primary curriculum is an important step in engaging children in digital competencies. It upgrades ICT (information and communications technology) to a new core competence within the primary curriculum, alongside English, maths and personal development. The aim is to embed ICT across the curriculum to cultivate digital competence essential for learning, business and life. It is also confronts girls’ negative perceptions of ICT that start very early on; currently, while just under half of students taking ICT at GCSE are female, only 10% of A-level Computing students are female and 15% of applicants to Computing degrees are female.³³
- 37. In today’s schools, young people are increasingly being prepared for a Digital Britain by using digital technology in the classroom, from “mashing up” archive film in history and citizenship lessons using *iMovie* to teaching science with digital cameras and animation software. By learning to ‘read’ films, young people

33 e-skills UK, ‘Technology Counts IT and Telecoms Insights 2008’.

are picking up new ways of being literate which are essential if they are to excel in the digital world. The *Film: 21st Century Literacy Strategy* recognises that such an education needs to be embedded more widely and consistently if Britain is to be a world leader in the digital market. The Strategy aims to create more opportunities for young people to increase the range and complexity of content they have access to, and to use film technology more creatively across the curriculum. A film education can help move young people on from being passive viewers or unreflective creators of content to active and informed critics.

Through UK Film Council funding (£750,000 over the next three years) the **Film: 21st Century Literacy Strategy** is helping to lay the foundations of a digital education.

The Film: 21st Century Strategy is funding 12 pilots across the UK over the next three years. The Strategy will create a bank of evidence to demonstrate the impacts of a digital education through film on young people, will offer blue-prints and models for further roll out, and will develop a Continued Professional Development model to support teachers and educators.

38. Of course, Sir Jim Rose's report recognises that ICT skills alone are not sufficient to equip primary school children. He places a welcome emphasis on the importance of developing creative skills, both as subjects in their own right, understanding the arts, including but not limited to art, design, drama, music, dance, creative writing and also using creativity across the curriculum in all subject areas.
39. Needless to say, the development of creativity and the use of the imagination is vital for the development of the range of talents needed to create intellectual property and wealth in all areas of Digital Britain. The Government launched a series of pathfinders in Creative Britain 2008 for a new cultural entitlement of five hours a week in and out of school for all children in England. These pathfinders will offer the first evaluation of the ways to extend these partnerships of the creative and cultural sectors working with education providers to give every child the chance to work with professional creators to develop their own creative talent.

Find Your Talent pathfinder areas are working in ten areas of the country:

Bolton, North Somerset, Telford and Wrekin, Leeds, Tower Hamlets, Liverpool, Leicester and Leicestershire, Customs House, The Creative Foundation (Shepway), Push for Culture (South Hampshire)

With young people at the heart of their programmes they are working to deliver high quality cultural experiences to nurture and develop young people's full creative potential. This means offering a broad range of cultural experience including harnessing the explosion of interest and talent in audio-visual creativity among young people.



40. By raising the education and training participation age to 18, Government aims to encourage students to achieve higher levels of qualifications. It is also rolling out a major programme of reforms to the curriculum for 14-19 year olds, including an emphasis on applying ICT knowledge in real life contexts. School will support all young people to achieve level 2 functional skills in ICT where possible and general qualifications are being revised to ensure their relevance in a rapidly changing work environment. New GCSEs in English, Maths and ICT, incorporating functional skills, will follow in 2010.
41. Specialist Arts and Music Colleges are supporting young people to develop digital life and work skills in day to day teaching through investment in professional standard software and hardware set in enhanced creative spaces such as recording, TV and radio studios and digital art and media suites. Many schools are running their own radio stations and TV stations and are creating the technical support teams for theatres so that young people are also able to develop the skills required by the creative industries. The recent Ofsted report 'Drawing Together'³⁴ identified that the best ICT practice was often found in specialist visual arts colleges, where teachers used it, for example, to model layout, superimpose imagery and deconstruct existing art.
42. Media Education, as distinct from Media Studies, is seen in an increasing number of Arts Colleges as part of an extended definition of literacy, ideally provided across the curriculum, but with opportunities for specialist teaching and assessment of learners' progression in relation to explicitly 'media' outcomes. There is also considerable support for the concept of media as part of the arts curriculum, using digital media to enhance traditional ways of working through the creative process and adding another dimension to students' learning. Arts Colleges are leading the way in developing innovative schemes of work which combine creativity with digital art.
43. Diplomas, the new qualification for 14-19 year olds, combine theoretical and practical learning and have been developed in partnership with over 5,000 schools and colleges, universities and employers. The first five Diploma lines have been taught in schools and colleges since September 2008 including IT, and Creative and Media and there will be 17 lines at 3 qualification levels available by 2012. The latter will help swell the numbers entering the digital professional workforce who can "hit the ground running" with enhanced practical and transferable skills, industry knowledge and business awareness. All Diploma learners will gain valuable transferable skills in English, maths, and ICT through the functional skills component of Diplomas.
44. Arts and Music Colleges have embraced the opportunities to work with the Creative and Media Diploma: staff and students are able to enjoy spending an extended period of their studies working in an area of particular interest, combining creativity and digital technology for real outcomes. At the heart of

34 Ofsted report "Drawing Together: Art, craft and design in schools " April 2009



the Arts and Music specialism is a commitment to providing the best opportunities for students to prepare for the digital age.

45. Specialist Arts and Music Colleges are at the forefront of a diversification in the suite of qualifications, offering awards in, for example, animation, music technology, sound and lighting, from a broader range of providers than the main awarding bodies. These vocational qualifications encompass digital technology in a way that prepares young people to take a full part in Digital Britain.
46. First Light is the UK's leading initiative enabling young people to realise their potential via creative digital projects. It funds and inspires the making of short digital films, reflecting the diversity of young people's lives through £1.1m of UK Film Council Lottery funds each year. First Light is also the lead organisation managing DCSF's youth initiative Mediabox, distributing £8m over two years.

Creative Partnerships is one of the Government's flagship creative learning programmes funded by the DCMS and DCSF. It is designed to develop the skills of young people across England, raising their aspirations and equipping them for their futures. Young people develop the skills they need to perform well not only in exams and extra-curricular activities, but also in the workplace and wider society. Working alongside Find Your Talent, it tests innovative ways of developing creativity.

Mediabox gives 13-19 year olds in England the opportunity to develop and produce creative media projects for film, television, radio, online and multimedia platforms.

The **Young Design Programme** created and run by the Sorrell Foundation gives schoolchildren the chance to work with university student designers to solve real problems.

Now funded by Becta, the e-skills UK programme **CC4G** (www.CC4G.net), gives 10-14 year old girls a new perspective on technology-related careers, while helping them to acquire valuable skills. Over the past three years, CC4G has engaged with more than 3,500 schools and 125,000 members. In 2009, CC4G will continue to deliver positive perception change on IT related careers through the existing format of out of hours clubs, as well as within curriculum time and will expand to include material for boys.

47. Government has invested considerably in both ICT infrastructure and in the provision of ICT kit in schools, with most now well-equipped to make better use of technology to support learning; and is establishing a network of nine regional ICT support hubs providing a range of Continuing Professional Development models that, among other things, improve teaching and learning. The education and training system is being supported through the Government's Harnessing Technology³⁵ strategy to become fully confident in its use of technology.

35 http://partners.becta.org.uk/index.php?section=ppb&catcode=_ppb_pb_01&rid=15462



48. The Technology Strategy Board, in collaboration with BIS and Becta, is now exploring the feasibility and scope for an innovation platform to develop learning technologies to address national skills challenges.
49. A key concern with current teaching of ICT has been the lack of qualifications, skills and status of ICT teachers. ICT is recognised as a priority subject by the Government and the Training and Development Agency for Schools (TDA) and efforts are being made to recruit more specialist ICT teachers. All eligible trainees on postgraduate courses leading to qualified teacher status in England currently receive a £9,000 training bursary and a golden hello payment of £2,500 in the second year of teaching after induction has been completed satisfactorily. These incentives have helped reduce the number of ICT teaching vacancies in local authority maintained secondary schools from a peak of 2.8% in January 2001 to 0.8% in January 2009.
50. The £300m Home Access Programme, currently in pilot phase and due to be rolled out nationally in Autumn 2009, will promote the benefits of home access to families and give direct financial support to around 330,000 of the most disadvantaged learners whose families meet the eligibility criteria.
51. DCSF is working with schools and other delivery partners to improve the quality and impartiality of Careers Education (CE) within schools and strengthen and develop the Information Advice and Guidance (IAG). DCSF will launch its IAG strategy this Summer, drawing together the range of national and local online services. SSCs are involved in developing and updating job profiles on the jobs4u careers' database which has links to further detailed information, including SSC websites; the Apprenticeship vacancy matching service; Connexions Direct; Directgov; and to local 14-19 Prospectuses.

The £2.7m e-skills UK **Revitalise IT** project seeks to address the decline in uptake of IT-related degree courses, including work with employers and universities in the south-east to achieve greater alignment with the needs of employers and to transform student attitudes to IT-related educations and careers. The project will also work intensively with a small number of institutions with an interest in business IT to enhance their existing curriculum. The project will continue to 2010.

BUILDING HIGHER LEVEL SKILLS FOR A DIGITAL BRITAIN

52. World class research and high quality teaching in HE are crucial to compete successfully in the emerging global economy. HE has always had a core role in contributing to the success of the wider economy. Over the past 50 years, the massive increases in student participation levels, the constant development of new programmes and new institutions such as business schools, and the expansion of research have been driven by economic needs. It is more important than ever that HE should offer the education that will equip students for their current and future lives, to be able to respond to rapidly



changing needs in the digital sectors and the wider economy. Universities face the challenge of responding to student and business needs that are increasingly complex.

53. The UK needs a supply of a hybrid mix of higher-level digital and other skills if we are to remain competitive in digital technology and to continue to attract foreign direct investment. The sector needs a well-skilled recruitment pool with a particular focus on business skills, interpersonal skills and on higher-level technical skills.
54. The UK HE sector produces world-class graduates in the disciplines which underpin a Digital Britain (IT/Computing, Communications Technologies, and Creative Technologies). Yet we know that there are also problems getting graduates with the right skills into the right jobs at the right time.
55. Student demand for computing courses has fluctuated in recent years. There was a steep rise in demand and provision through the 1990s, followed by an equally steep fall in the first half of the present decade. The decline might be a reflection of perceived employment opportunities after the collapse of the dotcom boom and the waning of concerns about the 'Millennium Bug'. Since 2006-07 numbers have levelled off and accepted applicants have started to rise again for the current year, but we should not be complacent and should continue to promote the sector as an area with good opportunities for those with the right aptitudes.
56. There are around 13,000 media programmes at FE and HE levels serving an estimated 50,000 students. This is oversupply in terms of the digital media sector but provides valuable skills into the wider economy. However, too many courses produce graduates with general digital media skills but with insufficient specialisms to meet employer needs.
57. **In July we will publish a Higher Education Framework which will set out how the activist approach of *New Industry, New Jobs* will be applied in the HE sector.** It will be a comprehensive overview of the future role of HE, ensuring that Government supports the HE sector and employers, including in digital industries, in working together to address sectoral skills needs.
58. The HE Framework will call on universities to support the sectoral strategies promised in *New Industry, New Jobs*. It will set out how Government will make clearer signals to universities, so that new programmes can be established in priority areas, and existing programmes refocused. It will stress the importance of clear information being available about all programmes: what the student will study, how relevant businesses have been involved in the design and accreditation of the programme and what has happened to that programme's graduates in their early careers. It will also examine the issue of shaping learner demand, and how public funding mechanisms can be used to support subject areas that are most geared to future economic needs. The current revival of computer science course applications suggests that prospective students do pick up signals about employer demand.



59. Higher Education Institutions (HEIs) supply the highly-skilled people that Digital Britain needs. Those businesses, like any customer, need to articulate their needs, and what they will pay for those needs to be met. We want to speed up the move to a position where businesses in digital sectors routinely have this conversation with HEIs as suppliers of the skills businesses want. We will kick-start this process, which will evolve into a natural customer-supplier conversation without further Government intervention. Building on good work to date led by e-skills UK and Skillset in particular, we will bring together key players from Digital Britain industries and from HEIs to discuss how course content can be designed to meet sectoral needs, and what businesses are prepared to pay for this kind of tailor-made provision.
60. There are already many good examples of HEIs working with SSCs and employers to develop and deliver undergraduate and other higher level skills training programmes tailored to needs of employers, including through the explicit sector approval of courses. The Skillset accredited courses scheme recognises courses within the UK that offer exceptional standards of training in, for example, Screen Writing, Animation and Computer Games.

The **Skillset Media Academy Network** is formed from 19 Academies across the UK, centres of excellence in television and interactive media. Offering undergraduate and postgraduate courses, short courses and Continuing Professional Development, the Skillset Media Academies bring academia and the industry together to provide training that innovates to meet the challenge of the constantly evolving media industries.

There are five Skillset Media Academies in London including: **Ravensbourne College of Design and Communication**, which is relocating into a new state of the art building on the Greenwich Peninsula. The new building opens in 2010, and will be a centre of excellence for teaching and research in digital broadcasting. This is an outstanding new development, which the Government has supported. This Academy enjoys an international reputation for developing high level technical craft, creative content, entrepreneurial and business management skills, and for responding effectively to industry skills gaps.

Students have direct access to key players within the creative industries, to the very latest equipment and facilities, and the opportunity to showcase their talents at the annual Rave on Air event – the largest student-led broadcasting event in the UK. The Skillset Media Academies will use the synergy created through the partnership and its combined industry relationships to identify new opportunities for skills development. In addition to the breadth and depth of skills offered, this unique partnership will also capture cross platform and convergence opportunities and ensure that it is supporting the potential of the industry both for today and tomorrow.



61. In addition, DCMS has commissioned research into effective HE engagement with the creative industries that will inform the future skills the UK’s creative sector needs to retain its world-leading position. The wealth of existing good practice means we are now seeing new innovative course design for the IT sector where e-skills UK are working with HEIs to better meet employer demand.
62. Since 2007, we have prioritised growth in HE student numbers through employer-led Foundation degrees. A detailed National Foundation Degree Framework Specification has been produced by a consortium of ICT employers, HEIs and The Institute of Telecommunications Professionals to meet the needs of the ICT sector.

The Information Technology Management for Business (ITMB) degree

The Government encourages businesses to work with universities in devising courses suited to today’s business needs. The Information Technology Management for Business (ITMB) degree was designed by employers of IT professionals and universities with the support of the Sector Skills Council, e-skills UK.

ITMB, which is focused on deriving business benefit from technology, established a new model of degree course with equal weighting given to technical, business, interpersonal and project competencies. A growing band of employers – currently over 50 – support the delivery of the programme, for example delivering ‘guru’ lectures, offering work experience, donating competition prizes and providing careers advice.

With employers across the sector actively working together to develop and support the degree, students can be confident that their learning is immediately relevant and will give them a head start in their IT career.

With over 550 students currently studying ITMB at 13 universities, applications are increasing rapidly. It is also helping to address a gender imbalance, with the proportion of women on ITMB degrees (32%) being double that of IT degrees overall.

BUILDING THE SKILLS OF THE EXISTING WORKFORCE

63. We are implementing a ‘demand-led’ skills system that delivers what employers and individuals need. That demand-led approach is increasingly effective in meeting today’s skills needs; in particular, Train to Gain is successfully delivering high-quality work-based training for employers and learners.
64. However, if we are to rise to the challenges and seize the opportunities of the new global economy, the skills system must not only respond to current demand but also anticipate and respond to the skills needs associated with the future growth in the economy in areas such as Digital Britain.
65. A key element of this work will include developing with employers, the UK Commission for Employment and Skills (UKCES), and the network of SSCs,



including e-skills UK and Skillset, the analytical capability to quickly and effectively collect, process, and disseminate intelligence on current and future skills needs in key sectors and markets like the digital sectors.

66. The new Skills Funding Agency (SFA), which becomes operational later this year, will ensure that the skills system has the capacity and the funding available to respond to the skills needs identified in sectors, such as digital technology and digital content, which will be key for future growth.

THE ROLE OF THE SSCS

67. Sector Skills Councils play a vital role as advocates for their industries and in identifying and tackling sector-critical skills needs. The core remit of SSCs is to raise employer ambition and investment in skills; articulate the future skills needs of their sector, and ensure that the supply of skills and qualifications is driven by employers.
68. Skillset is the SSC for the broadcasting, photo imaging, audio visual and publishing sector. Skillset was one of the first SSCs to achieve a new licence, in May of this year. The re-licensing assessment showed Skillset to be particularly strong in partnership working with the HE sector, playing a leading role in the development of Screen and Media Academies. Skillset has also demonstrated strong performance in working across the four nations to achieve objectives. They have shown that they are of the highest calibre and providing a good service to employers in their sector.
69. e-skills UK is the SSC for information technology. e-skills UK has led sector specific solutions that have brought significant benefits for employers and learners, including the Computer Clubs for Girls programme which has helped around 125k girls in 3,800 schools; the Information Technology Management for Business degree that is now offered in 13 universities; and 30k skills passports that are being used by individuals to track progress in IT user skills.

NSA FOR IT

The Government is looking to invest £8.5m in a brand new National Skills Academy for Information Technology accompanied by a similar level of employer investment over a three year development phase. Once it has achieved final approval by the LSC later this year, the Academy, which is currently in a development and business planning phase, will be a destination of choice and excellence for industry training and world class skills. The Academy will put employers at the heart of skills training for their sector, with e-skills UK, providers and employers working together to transform the UK's ability to address its IT professional skills needs. The Academy will identify demand for future skills needs, ensure a responsive supply of excellent education and training, and ensure this is easily accessible by employers. It expects to train 10,000 IT professionals in its first three years.



Delivering business value from technology depends on highly capable IT professionals, who need constantly updated skills. Through the Academy, IT professionals will be able to develop their skills to universally recognised standards which provide global competitive advantage to companies of all sizes in every sector.

The Academy will improve the uptake of employer-valued learning and qualifications. It will make it easier for employers to identify and access appropriate high quality training and development programmes from a network of world class education and training providers. It will also enable employers and educators to develop innovative new skills solutions, such as programmes to develop capabilities such as the management of complex IT projects, global outsourcing and IT-enabled business change. This includes building on the existing investments of many of the Academy's employer partners who are working in partnership with universities to develop new degrees and Masters programmes to meet the needs of the sector.

The new Skills Academy will also support the development and expansion of apprenticeships in the IT sector by providing a centre of excellence in the delivery of training for sector apprentices at all levels, including Advanced and Higher Apprenticeships. It will also develop new delivery models to respond flexibly to demand for apprentices from SMEs. For instance, through its employer partners, it will open up high quality programmes from large organisations to smaller companies in the sector.

The Academy will enable employers to find the best training more easily and to achieve a greater return on training investment, and it will enable IT professionals to increase their skills and ability to add value for employers. Through the Academy, IT professionals will be able to achieve recognition for skills acquired on the job and from private training courses, employers' own training, and publicly funded provision in HE and FE.

TRAIN TO GAIN

70. Train to Gain is the Government's flagship skills service for employers. Since it was launched in April 2006, over 127,000 employers have engaged with Train to Gain and nearly 1 million learners have been supported to improve their skills and gain new qualifications.
71. Through the service employers of all sizes in the digital sectors can access quality-assured, impartial advice to help them identify and address their skills needs at all levels from basic literacy and numeracy, through to apprenticeships and higher level skills. Impartial, expert skills brokers will work with employers to help them identify their skills needs at all levels, and then source the top quality training – including apprenticeships – that will best address those needs. Government funding is available, to sit alongside the employers' own financial contribution, to pay for the training. Government funding is



specifically targeted at lower level skills which are essential if we are to address social and digital exclusion.

72. The Train to Gain offer to employers is tailored to meet the particular needs and circumstance of employers through 'sector compacts'. In support of the digital media sector, the Government has agreed a compact with Skillset, worth £11m over the next three years, to provide additional support for employers to invest in skills in areas – such as advanced media techniques, digital print and computer games development – needed to help the industry maintain its international position.

APPRENTICESHIPS

73. Although the primary skills needs for a Digital Britain are at the higher levels, apprenticeships provide an important entry route and career path into the digital sectors. The Government is committed to ensuring that apprenticeship programmes provide clear progression routes for young people and adults to employment and, if they want to, to continue studying in further or higher education. We will ensure that level 3 and level 4 qualifications within an apprenticeship programme have a UCAS tariff rating to support and encourage progression to higher education, where appropriate.
74. Skillset has developed apprenticeships in craft grades for film and TV, for photographers in Photo Imaging and in Quality Assurance Testing for Computer Games. As many roles in digital media require a hybrid of technical and creative abilities, there is a need for multi-skilled new entrants who are able to develop understanding of the whole production process and know how to undertake a number of different functions within it. Therefore, Skillset is developing a level 3 Creative and Digital Media Apprenticeship Framework as a cross-sector initiative. London and the North West of England are the first areas to pilot this new activity and Skillset is planning further expansion in the South West, Scotland and Wales. Responding to the needs for high-level skills, Skillset is currently piloting high-level Apprenticeships linked to the attainment of Foundation Degrees and offered in partnership between a Skillset Media Academy and an employer or employers.
75. As a predominantly graduate workforce that continues to recruit graduates but still needs to train them on their first job, the digital media industries would like to have apprenticeships and internship programmes for graduates and others entering digital professional careers. This requires development of new level 4 apprenticeship frameworks to provide a flexible route into the industry. By complementing current apprenticeship policy, these programmes will provide employer-designed apprenticeships and shorter-term internships with flexible training content that meets industry needs and provides an efficient bridge to work.
76. Apprenticeships are valuable at all levels but we expect with the rate and pace of transformation and utilisation of innovative digital technologies throughout



our economy, that the demand for higher level skills will continue to grow. Higher Apprenticeships are already available in IT and Telecoms – aimed at those who develop systems, software, services and communications infrastructure – and for IT users, to enable managers to understand the strategic implications of technology and to realise its full potential in the business context. These programmes include foundation degrees with additional units at levels 3 and 4 requiring competence in the work context.

The **BBC Vision Intake Pool** is an entry level programme designed to develop a more diverse pool of talent within the organisation which better reflects the diversity of the organisation's audiences. The focus is on selecting people with a passion and interest in the media. The programme targets people with a real understanding – or direct experience – of the issues facing the diverse communities which make up the UK. Potential is more important than any prior experience or qualifications. As such qualifications are not part of the sifting process.

CREATING EMPLOYMENT OPPORTUNITIES IN THE DIGITAL SECTORS

77. In some of the creative and cultural training centres such as the performing arts and music which are the starting point for many entering the creative industries, there are fewer requirements for higher education qualifications. Many of the entry points require enthusiasm, passion and talent rather than formal qualifications.
78. As we describe elsewhere in this report, the passion for news gathering and journalism has extended beyond the analogue definitions of professional and amateur. The new opportunities for local news gathering, community based initiatives in radio and online, and the development of local and regional consortia, offer tantalising opportunities to create new models for regional and even local training hubs.
79. The Government proposes that the pilots of local news consortia include the development of appropriate partnerships with local FE and HE and other appropriate local partners to enable them to act as training hubs and entry points at local level to journalism and other digital news jobs.
80. In the longer term, the creation of local news consortia could change the balance of training and job opportunities by creating centres of training and career guidance at a wide selection of local and regional centres. The local hubs should develop clear pathways and links to regional providers, taking advantage of professional training opportunities co-ordinated by Skillset or public service content and news providers.
81. The challenge is to create a new culture of local and regional training, fair and transparent entry points and erode the old privileges of unpaid internships, access to which can be a matter of who you know rather than what you know.



82. The initial findings of the Fair Access to the Professions panel chaired by Alan Milburn lays down a foundation to all the professions, as well as employers and the Government, to rise to the challenge to now go further and faster in breaking down the practical barriers that stand in the way of talented young people across the country being able to realise their aspirations. The panel will make its recommendations to the Government this Summer.
83. DWP, DCSF, DCMS and BIS are working together to ensure that training and investment in job creation is part of a coherent strategy across Government to maximise opportunity for all. The digital sectors will make a strong contribution to plans to provide between five and ten thousand jobs for young people in the culture and creative industries announced as part of the Future Jobs fund.
84. The creative sectors are well placed to contribute to Government's commitment that every 18 to 24 year old who is approaching 12 months unemployment or more will be guaranteed a new job, training or a paid work experience place. We are exploring how these sectors can access the £1bn Job Fund and help provide employment and training for unemployed young people. Young people bring as many skills as they learn, and have the power to transform our cultural and creative institutions.

INVESTING IN THE CAPABILITY OF BUSINESSES TO ADD ECONOMIC VALUE

85. UK SMEs make up nearly 90% of the economy and they need support to enable them to exploit advanced technology in order to transform their business processes. Digital business skills propel the economy, yielding efficiencies and bottom-line business benefits. Virtually every company in the UK, large, medium, small and micro, uses digital media for all sorts of business needs: human resources, public relations, finance, supply chains, marketing, training, interactive communications, relationship management and innovation. Matching skills capability to this ebb and flow, to this dynamic evolution, is a vital ingredient for the UK to remain in the vanguard of the global digital league.
86. For the UK to leverage competitiveness and productivity benefits, it is essential for those strategically influential business people – including in SMEs and the UK's four million leaders and managers – to have a solid grasp of the strategic implications of technology and to be able to deploy the skills (themselves and within their workforce) to realise its potential.
87. Companies that do not adopt digital technology fail to benefit from the productivity and competitiveness benefits it offers. It should be no more acceptable for those in leadership roles to lack an understanding of technology than it is to lack an understanding of finance.
88. SMEs, in particular, need targeted business support to help them understand the potential business benefits of ICT.
89. That is why **BIS, in collaboration with the Regional Development Agencies (RDAs), is spending up to £23m over three years piloting a range of**



business support interventions for SMEs to assist them to exploit advanced ICT to transform their business processes.

- 90. The creative industries, mostly themselves SMEs, have responded with enthusiasm to the rallying call of the Government to support and develop the talent of 18-24 year olds who may face unemployment in the next year. This provides a new impetus for Government to work to ensure that the tools offered through TTG equip the employer to support the unemployed trainee in these creative workplaces.

GOVERNMENT’S ROLE AS CUSTOMER AND REGULATOR

- 91. The Government believes that open markets are a source of efficiency and dynamism, and that competition breeds innovation and growth. A more active approach from Government to competitiveness as a whole, and to skills within that – as described in *New Industry, New Jobs* – does not imply a fundamental change in the Government’s view of the relationship between the market and the state.
- 92. That said the way the Government sees its own role in the market does need to change. Government has a fundamental role in setting the regulatory framework in which Digital Britain operates. Through that role, we must stand ready to address market failures which might otherwise significantly constrain economic performance, including businesses being handicapped in competing effectively in the market because of a lack of available skills, and businesses lacking the expertise they need to enter new or overseas markets.
- 93. Government is committed to ensuring that regulatory frameworks actively contribute to and encourage skills development.
- 94. Government’s role as a customer in the market also offers a unique opportunity to support and promote investment in innovation and skills. Government is committed to routinely considering and addressing skills issues through public procurement – worth some £175bn a year, including £14bn on IT contracts – both in letting new contracts, and working with existing contractors on a voluntary basis.
- 95. Within that overarching commitment, we have been working with public sector clients and suppliers in individual sectors to shape and make a reality of more specific commitments that will help address the particular skills issues in those sectors. **Whenever Government Departments and Agencies let major new IT contracts, they will now look to make it a requirement that the successful contractor has in place a formal training plan for the development of the project workforce. We will also look to promote investment in skills through Government’s procurement of creative content.**
- 96. To support clients and suppliers in making a reality of these commitments, DIUS and OGC recently published *Promoting Skills through Public Procurement*, a new guide to provide procurers across the public sector with practical advice on how skills and training can be embedded in public procurement.



THE ROLE OF THE PUBLICLY FUNDED OR PUBLICLY OWNED BROADCASTERS

97. Public service broadcasters have a unique responsibility in increasing digital participation and therefore the skills needed in a Digital Britain. The BBC already has a formal obligation under its Agreement to contribute to the preparation and maintenance of a highly skilled media workforce. In fulfilment of this obligation the Corporation continues to invest heavily in training programmes and to set standards for the entire industry.
98. The BBC and Channel 4 too have an important role to play. In particular, Channel 4 will have the opportunity under its new remit to enhance its contribution to engagement and development across the sector. Channel 4's own commitment to diversity issues for example might lead them to feel that this is an area in which they would particularly wish to lead, building on their Work Related Learning programme. **The Government will be working with Channel 4 and with Skillset in the coming months to ensure that this potential is fully realised.**
99. The Government would encourage all content providers individually and the Producers Alliance of Cinema and Television (PACT) to work with Skillset and the RDAs to ensure that they play their role in Future Jobs and other Industrial Activism, providing appropriate mentoring and training support to new SMEs, emerging individual creators and entrepreneurs as well as training opportunities for staff and apprenticeships.

CONCLUSION

100. Government is seeking to create a seamless strategy from the very young in primary education through a much improved education system founded on the building blocks of digital careers and a re-vitalised HE skills system better aligned to the needs of a 21st century digital economy.
101. The delivery of education and skills in this range of creative and technological abilities we need for Digital Britain has tested the ability of Government to join up the needs of employers, consumers and citizens with emerging entrepreneurs and workers. However, the best of our talent is in demand round the world, which shows we are on the right road, and increasingly our models of talent development are also being copied round the world. If our Industrial Activism creates the right markets in the workforce, the right policy incentives and the right consumer conditions, then our talents will reap the rewards they deserve here in the UK for the benefit of our citizens and our economy.



CASE STUDY

The Blogger

Judith O'Reilly has re-invented herself in the blogosphere. The former Sunday Times and BBC journalist has become a best-selling author after chronicling her London exile as "Wife in the North".

Shortly after launching the blog, the volume of users and recommendations from other bloggers attracted the attention of Penguin, which last year published a paperback version of her online diary, charting the troubled adjustment of an urban family to rural England.

The emotional roller-coaster won followers from Indonesia to Australia and the US. "At a time when people don't know their own neighbour, there is a great deal of interest in what your virtual neighbour thinks," says O'Reilly, now working on her second book.

Her publishers, aware of the link between "digital word-of-mouth" and book sales, encouraged her to create a Facebook presence, while advertising the book-of-the-blog on YouTube.

The exercise has not been stress-free. "On a blog you can acquire trolls, which are anonymous critical commentators," explains O'Reilly. "You have to decide whether to live with them or not."

She monitored site traffic using Technorati, the service that shows which other blogs are connecting to Wife in the North, where users are from and how long they stay on the site. Such technology helps measure audience appetite and reaction to blog content, which O'Reilly warns can be both supportive and harsh.

Whatever the subject matter, she identifies some common themes in the blogosphere. "You need very little technical know-how. You can have a professional blog or a hobby blog for something like knitting or dog-breeding right through to politics. If a blog is authentic and you have a passion for saying what's on your mind, it shows."

