

Sector Skills Insights: Digital and Creative

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Sector Skills Insights: Digital and Creative

Matthew Williams, Jim Hillage

Institute for Employment Studies

Rachel Pinto, Richard Garrett

UK Commission for Employment and Skills

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Foreword

The UK Commission for Employment and Skills is a social partnership, led by Commissioners from large and small employers, trade unions and the voluntary sector. Our mission is to raise skill levels to help drive enterprise, create more and better jobs and promote economic growth. Our strategic objectives are to:

- Provide outstanding labour market intelligence which helps businesses and people make the best choices for them;
- Work with businesses to develop the best market solutions which leverage greater investment in skills;
- Maximise the impact of employment and skills policies and employer behaviour to support jobs and growth and secure an internationally competitive skills base.

These strategic objectives are supported by a research programme that provides a robust evidence base for our insights and actions and which draws on good practice and the most innovative thinking. The research programme is underpinned by a number of core principles including the importance of: ensuring '**relevance**' to our most pressing strategic priorities; '**salience**' and effectively translating and sharing the key insights we find; **international benchmarking** and drawing insights from good practice abroad; **high quality** analysis which is leading edge, robust and action orientated; being **responsive** to immediate needs as well as taking a longer term perspective. We also work closely with key partners to ensure a **co-ordinated** approach to research.

This report contributes to the UK Commission's work to transform the UK's approach to investing in the skills of people as an intrinsic part of securing jobs and growth. It outlines the performance challenges faced in the **Digital and Creative** sector, the 'real-life' skills solutions implemented by leading and successful businesses to overcome them, and the benefits from doing so. Similar reports are available for the following sectors: Advanced Manufacturing; Construction; Education; Energy; Health and Social Care, Professional and Business Services; Retail; Tourism. Each report is summarised by an accompanying PowerPoint slide pack. By understanding the key performance challenges employers face and the skills solutions available to address them on a sector-by-sector basis the UK Commission can make better use of its investment funds to support economic growth.

Sharing the findings of our research and engaging with our audience is important to further develop the evidence on which we base our work. Evidence Reports are our chief means of

reporting our detailed analytical work. Each Evidence Report is accompanied by an executive summary. All of our outputs can be accessed on the UK Commission's website at www.ukces.org.uk

But these outputs are only the beginning of the process and we will be continually looking for mechanisms to share our findings, debate the issues they raise and extend their reach and impact.

We hope you find this report useful and informative. If you would like to provide any feedback or comments, or have any queries please e-mail info@ukces.org.uk, quoting the report title or series number.

Lesley Giles
Deputy Director

UK Commission for Employment and Skills

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GLOSSARY

This report uses data from several sources and uses a definition of the sector depending upon which data sources are available.

PRINCIPAL DATA SOURCES

Employer Perspectives Survey 2010 (EPS 2010)

The UK Commission's Employer Perspectives Survey 2010 gathered the views of approximately 14,500 employers on the UK's employment and skills system. The aim of the survey is to provide evidence to stakeholders operating in the system across the four UK nations to inform policy and improve service delivery.

<http://www.ukces.org.uk/publications/er25-employer-perspectives-survey>

The UK Commission's UK Employers Skills Survey 2011 (ESS 2011)

The UK Commission's UK Employer Skills Survey (UK Commission 2012) provides UK-wide data on skills deficiencies and workforce development across the UK on a comparable basis. It was undertaken at the establishment level and involved over 87,500 interviews, with a follow up survey of over 11,000 employers focusing on employers' expenditures on training.

<http://www.ukces.org.uk/publications/employer-skills-survey-2011>

Working Futures Database

Working Futures 2010-2020 (Wilson and Homenidou, 2011) is the most detailed and comprehensive set of UK labour market forecasts available. The results provide a picture of employment prospects by industry, occupation, qualification level, gender and employment status for the UK and for nations and English regions up to 2020. The database used to produce the projections is held by the University of Warwick Institute for Employment Research and Cambridge Econometrics.

<http://www.ukces.org.uk/assets/ukces/docs/publications/evidence-report-41-working-futures-2010-2020.pdf>

Labour Force Survey

The Labour Force Survey (LFS) is a quarterly sample survey of households living at private addresses in the United Kingdom. Its purpose is to provide information on the UK labour market that can then be used to develop, manage, evaluate and report on labour market policies. It is conducted by the Office for National Statistics. Figures quoted in this report are based on a four quarter average.

<http://www.ons.gov.uk/ons/guide-method/surveys/respondents/household/labour-force-survey/index.html>

SECTOR DEFINITION

The definition of the sector used in this report is given in the table below.

Digital technology		Creative media and entertainment	
SIC07 code	Description	SIC07 code	Description
61	Telecommunications	58	Publishing
62	Computer programming, consultancy and related activities	59	Motion pictures
63	Information Service activities	60	Programming and broadcasting
95	Repair of computers and other goods	73	Advertising and market research
		74	Other professional scientific and technical activities (nb: includes design, photographic, translation)
		90	Creative arts and entertainment
		91	Libraries, archives, museums, etc

Executive Summary

Introduction

This report examines the digital and creative sector in the UK, the challenges it faces over the medium term and how they can be addressed through skill development and thereby bring about growth and contribute to the recovery of the UK economy.

The sector comprises digital technology, and creative activities. The digital technology sub-sector provides the infrastructure and platforms through which creative content is often delivered. While the creative industries include film, TV, radio, computer games, publishing, advertising, music, performing/visual arts, design and cultural heritage. Over the years there has been greater synergy between the digital and creative sub-sectors. For instance, digital technology is transforming the creative sector (particularly creative media industries) as well as being an important driver behind the growth of ICT products and services.

The importance of the sector

The UK's digital and creative sector makes a significant direct and indirect contribution to the UK economy.

- The net output of the sector in 2010 was £92billion, eight per cent of the UK total having grown by 2.5 per cent per annum over the previous ten years, faster than the economy as a whole (Wilson and Homenidou, 2011). Productivity in the digital sub-sector is almost three times the national average and above average in the creative sub-sector (UKCES, forthcoming a).
- Employment in the sector accounted for around six per cent of total employment in the UK in 2010, (Wilson and Homenidou, 2011). This is above the EU-27 average of 4% (Eurostat, 2011).
- The UK's digital technology sector is ranked 6th in the world in terms of its competitiveness (e-skills et al. 2009), and the UK has the largest creative sector in Europe (eg IPA, 2009, IFPI, 2009, UK Film Council 2009). Both components are major exporters.
- The sector was one of the fastest to recover following the recession of the early 1990s and is projected to be one of the fastest growing sectors over the coming decade. Employment is also expected to continue to grow, but at a slower rate than output underlining the sector's productive potential (Wilson and Homenidou, 2011).

The 1.9 million people who work in the sector are much better qualified than average. One third work in professional occupations compared with a fifth in the labour market as a whole. Employment is focussed on small workplaces, particularly in the creative sub-sector, and there is a relatively large number of self-employed workers across the sector. Men are far more likely than women to work in the digital sub-sector while the gender profile in the creative sub-sector is more balanced and in keeping with the national picture. The digital sector therefore draws on only a fraction of the nation's talent pool. The workforce as a whole is relatively young, though older in the digital sub-sector and there may be a need to replace skills as the existing workforce retires.

Key Challenges

A key challenge facing the digital and creative sector is to maximise its competitive advantage by not just keeping pace with technological and other innovations but leading them whilst at the same time meeting consumers' expectations. This means investing in the quality of the consumers' experience, taking advantage of technological change and exploiting the synergies between digital technology and creative content. At the same time businesses will need to protect their copyright and intellectual property rights. Creating sustainable businesses in a world where many expect unlimited access to content without being charged is a major challenge.

Skill demand

The sector is characterised by continuous technological change and development. This gives rise to specific skill needs in the sector over time. For example security skills will be important as data protection is a key concern for the sector. New forms of technology including cloud computing and the continued convergence of IT and communications technologies mean security has to evolve to keep-up with threats. Other issues will stoke demand for high level technology specific skills, such as the move to a low carbon economy requiring skills in power management and thermal solutions which are likely to include significant technological elements. In the creative sub-sector technical skills will be needed to produce content across multiple-platforms. Technology drivers in the digital sub-sector, and the business model challenge for the creative sector, will also mean that the sector will have high demands for managerial, professional and technical skills over the medium term.

Employment projections for the sector as a whole indicate that there will be growing need for high level skills. It is expected that there will be 300,000 more managers, professionals, and associate professional occupations between 2010 and 2020 as the sector grows – an increase of over 20 per cent on the 2010 employment levels. In addition to meeting this expansion demand as the sector grows, there will also be the need to meet replacement demands as individuals leave the sector. Replacement demands are projected to be even greater than the expansion demands for managerial, professional and associate professionals. As a result, there is a total requirement for these three occupational groups of just under 800,000 between 2010 and 2020, 300,000 in the digital sub-sector, and just under 500,000 in the creative sub-sector.

A key challenge for the sector will be to ensure that its skills supply chain, through initial, secondary and tertiary education, through the vocational educational and training system and through ongoing workplace development generates both the quantity and the quality of skills to meet these growing demands.

Skills Supply

Applications to computing and IT courses are in decline and the *quantity* of graduates may not be sufficient to meet the growing demand for professional and technical skills. Women make up only 15 per cent of the intake to computing-related courses. The number of creative graduates is rising and the majority are female. However employers are concerned about the *quality* of their education and whether they finish their studies with right sort of skills that employers want, particularly in fast-moving sectors such as visual effects. Apprenticeship numbers have risen rapidly in recent years, from a low base, particularly at advanced level although the numbers of higher-level apprenticeships is still very low.

Much of the training carried out in the sector is done informally, therefore relatively few employers arrange training for their staff in the sector compared with the economy as a whole, particularly training that leads to national recognised qualifications. The proportion of the workforce receiving formal training is also below average and falling. Despite the large proportion of digital and creative employees in managerial, professional or associate professional jobs the proportion of in receipt of work-related training is well below average and digital and management training is less available than in other sectors.

Digital and creative sector employers tend to be less involved with government skill development initiatives and with the education system, than other employers and are less likely to think that the vocational qualifications available match the need of their business.

Generally digital and creative employers tend to adopt a less formal approach to the development of their employees, although their employees are more likely to benefit from job autonomy and flexibility.

Conclusion: growth through skills

The evidence that indicates that skill demand exceeds supply in the digital sub-sector, particularly for highly qualified and experienced professional and technical staff, includes high average wages, persistent reports of skill shortages (some severe) and the use of migrant labour.

Part of the problem would appear to be related to a relative shortfall in the quantity of initial supply particularly for higher-level skills in the digital sub-sector. Other problems include: the quality of graduates in the creative sub-sector; getting employers to invest more in workplace training to enable employees to have the opportunity to refresh their technical skills in a fast-changing environment; and findings ways for the large number of small employers and free-lancers in the sector to work together to provide workplace training more efficiently

Employers can play a significant role in meeting these changes through:

- Widening their recruitment pool and, for instance, encouraging more women to develop the skills to work in the digital sub-sector
- Helping to develop more high-level entry routes into the sector for example through apprenticeships
- Helping improve the quality of information, advice and guidance available for people interested in or already working in the sector
- Improving working environments through further high performance working
- Working more closely with education and training providers
- Working with providers to accredit courses
- Providing work experience placements
- Providing more in-house training and continuous professional development
- Collaborating with other employers to develop training solutions more effectively
-

1 The Economic and Policy Climate

Increasingly, the competitiveness of advanced industrial nations is explained with reference to the capabilities of their respective labour forces. Hence, national education and training systems are seen as providing comparative economic advantages. It is notable that over the recent past education and training have taken centre stage in policies designed to foster the UK's competitiveness and lie at the heart of the current Government's plans to kick start the recovery against a backdrop of challenging global economic conditions. To understand the role skills development might play in stimulating growth within the digital and creative sector requires some consideration of the current economic situation and current skills policy.

In 2012 the UK economy, and indeed the global economy, is still coming to terms with the repercussions of the 2008/9 economic recession. By comparison with previous recessions, 2008/9 was relatively deep and it continues to cast a long shadow over the country's medium-term economic prospects (see Table 1.1). The economic climate at the time of the 2008/9 recession and in the period afterwards has been characterised by low interest rates and a depreciation of sterling against other currencies, notably the dollar and the euro. Whilst these would usually be sufficient to give a fillip to the economy by boosting demand and, given time, increasing output, the potential for export led growth has been seriously undermined by continuing weak demand conditions across the global economy, especially in the Eurozone and the USA. Also the difficulties households and businesses have had gaining access to finance as the banks have sought to increase their capital has restricted growth. Moreover, the markets' continuing disquiet over developments in the Eurozone has contributed further to the climate of uncertainty in the global economy thereby further dampening demand.

Table 1.1 Four recent periods of recession in the UK

	Start date	Date of bottom of recession	Length of period from start to bottom of recession	Total decline in GDP (%)	Time taken for GDP to recover to level at start of recession
1	1974 Q4	1975 Q3	4 Quarters	3.8	7 Quarters
2	1980 Q1	1980 Q4	4 Quarters	5.9	13 Quarters
3	1990 Q3	1992 Q2	8 Quarters	2.3	11 Quarters
4	2008 Q2	2009 Q1	6 Quarters	6.3	?

Source: Office of National Statistics Quarterly Economic Accounts 1975, 1981, 1993, and 2010

As a consequence of the above developments, the rapid acceleration in growth observed after the recessions of the early 1980s and 1990s has failed to materialise and the UK has slipped back in to recession at the start of 2012. Nevertheless the economy is expected to resume its long-run growth path over time (see Figure 1.1) but in order to do so there are specific steps the UK economy needs to take. The UK Treasury has identified a number of weaknesses which need to be addressed if a sustained recovery is to be achieved (BIS, HM Treasury 2011):

- i. the level of debt funded household consumption;
- ii. the share of the economy accounted for by the public sector;
- iii. weak business investment;
- iv. an over-dependence upon financial and business services; and
- v. unbalanced regional growth.

Government has identified four ambitions which need to be realised in order to restore long-term sustainable growth (BIS, HM Treasury 2011):

- vi. creating the most competitive tax system in the G20;
- vii. making the UK one of the best places in Europe to start, finance and grow a business;
- viii. an over-dependence upon financial and business services; and
- ix. creating a more educated workforce that is the most flexible in Europe.

Therefore, the role of skills in national economic policy is clearly an essential one; to bring about recovery and sustainability by creating jobs and growth.

From the employer's perspective there is a need to adapt to both global demand side conditions and the consequences which are likely to arise from policies designed to rebalance the UK economy. Depending upon the sector there are likely to be a number of skill-related performance challenges which employers will need to address as they seek to consolidate existing markets, develop new ones, and introduce technical and organisational changes to improve their competitiveness. The importance of these challenges become even more apparent if one considers the role of skills in the economic cycle. Evidence demonstrates that the recovery from previous economic recessions was hampered by skills shortages, and that these skill shortages then contributed to further downturns in the economy (Blake *et al.*, 2000). Therefore, the message is clear: a failure to invest sufficiently in skills now has the potential to dampen future growth.

Figure 1.1 Employment and Gross Value-Added 1978 - 2020

Source: Wilson and Homenidou (2011)

At a time when capital investments are constrained as a consequence of problems in the global banking system, investments in skills, and human resources more generally, made through programmes such as Apprenticeships and Investors in People, and funded through initiatives such as the Growth and Innovation Fund, may be the most amenable to employers.

Based on the latest evidence available, this report considers the specific situation in the Digital and Creative sector to provide:

- an overview of the size and structure of the sector and the principal drivers of change over the medium term which are likely to have some bearing upon skill demand;
- an outline of current and expected patterns of skill demand in the sector;
- a description of skills supply and how this has adapted to changing patterns of skill demand;
- an analysis of mismatches between the demand for, and supply of skills, and the implications of this for the sector.

In conclusion, the report identifies the performance challenges faced by the sector and highlights the skills solutions available to address them thereby delivering increased levels of growth and contributing to the recovery of the UK economy.

2 The Importance of the Sector

The UK's digital and creative sector is a global leader. It was one of eight key sectors addressed in the Government's first growth review (BIS, HM Treasury 2011, p. 41), reflecting the fact that it makes a significant contribution to the economy. Harnessing the potential of the sector will be crucial to the UK's future competitiveness and prosperity. It already makes a significant contribution to the output of the economy, and employs 1.9 million people (approximately one in 14 workers), many of whom are highly skilled. Estimates indicate that 55 per cent of UK Gross Value Added (GVA) comes from technology-intensive sectors in the economy. Growth in technology occupations over the past ten years has been twice the average for the whole economy.

Within the sector there are two broad components: digital technology, and creative activities. The digital technology sub-sector provides the infrastructure and platforms through which creative content is often delivered. Creative industries cover film, TV, radio, animation, photo imaging, interactive content design, computer games, commercials, pop promos, publishing, advertising, music, performing/visual arts, design and cultural heritage.

Table 2.1 summarises the definition of the sector used in the analysis. It should be noted that this definition spans the footprints of three Sector Skills Councils (SSCs) that represent employers in the sector¹. Labour market intelligence provided by these SSCs has been used to inform the analysis in this report.

Digital technology is transforming the creative sector (particularly creative media industries) and the business models it uses, but also digital content is an important driver behind the growth of ICT products and services. Both the technology and creative components will need to respond effectively to the opportunities posed by globalisation and advances in digital technology. One of the challenges for the sector is to ensure it has the high levels of skills and technical capability to make the most of the opportunities available, to underpin future economic growth and provide interesting and fulfilling jobs.

¹ Three SSCs represent employers covered by the Digital and Creative Sector: e-skills UK covering (information and communications technology sector), Skillset (creative media industries, including film, television, radio and publishing), and Creative and Cultural Skills (CCS) – (performing arts, design, visual arts, craft etc).

Table 2.1 Definition of the Digital and Creative Sector

Digital technology		Creative media and entertainment	
SIC07 code	Description	SIC07 code	Description
61	Telecommunications	58	Publishing
62	Computer programming, consultancy and related activities	59	Motion pictures
63	Information Service activities	60	Programming and broadcasting
95	Repair of computers and other goods	73	Advertising and market research
		74	Other professional scientific and technical activities (nb: includes design, photographic, translation)
		90	Creative arts and entertainment
		91	Libraries, archives, museums, etc

Source : UKCES forthcoming a and b

2.1 Overall Output and Employment Performance

Table 2.2 highlights key output and employment indicators for the digital and creative sector over the last ten years, and projections for the coming decade.

Looking at net output first, the sector contributed £92 billion in 2010 (2006 prices), nine per cent of the UK total. Output had risen steadily, by 2.5 per cent per year on average, between 2000 and 2010. Future prospects look even brighter, and output from the sector is projected to grow by over five per cent per year to 2020.

The sector's workforce grew steadily throughout the last decade but at a slower rate than output, at 0.9 per cent per year. However, nearly all of this growth was among the self-employed, whose numbers increased by over four per cent per year between 2000 and 2010, and the number of full-time workers fell very slightly over this period. Looking towards 2020, much of the growth will again be among the self-employed, although the full-time workforce is also expected to increase. Future employment increases are expected to be more marked among the female workforce than the male workforce, a reversal of the trend over the last ten years.

Productivity (output per worker) in the digital technology sub-sector is nearly three times that of the average for the UK, with a GVA per person employed of almost £92,000 compared to the UK average of £34,000; GVA per person employed is also above average in the creative sub-sector, at £49,000 (UKCES UK, forthcoming a and b).

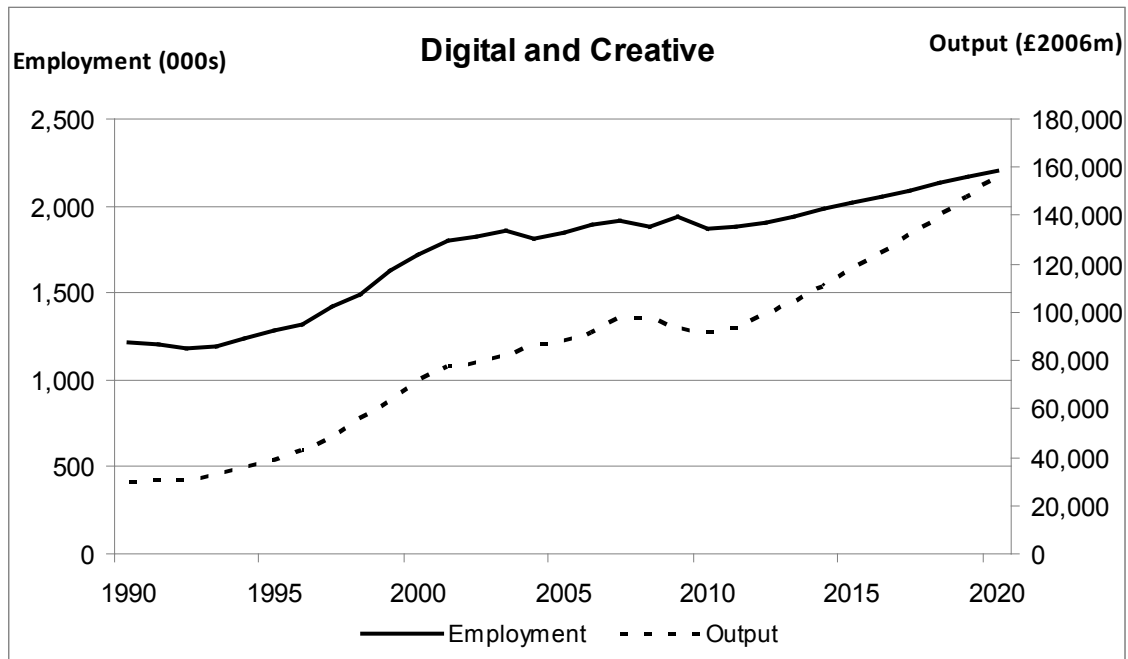
Table 2.2 Key Output and Employment Indicators

Digital and Creative	2010 level	Growth rate: 2000-2010 (% p.a.)	Changes (absolute)	Growth: 2010-2020 (%)	Growth rate: 2010-2020 (% p.a.)	Changes (absolute)
Output (£2006m)	91,798	2.5	20,134	70.4	5.5	64,609
Employment	1,871,940	0.9	155,985	17.5	1.6	326,964
Part time employment	264,567	0.3	8,194	20.2	1.9	53,456
Full time employment	1,121,824	-0.1	-8,461	9.1	0.9	101,802
Self employment	485,549	4.0	156,252	35.4	3.1	171,706
Male employment	1,197,032	1.5	166,925	14.2	1.3	170,458
Female employment	674,908	-0.2	-10,940	23.2	2.1	156,506

Source: Wilson and Homenidou (2011)

Definition: see Table 2.1

Figure 2.1 shows the trends since 1990 in employment and output in the digital and creative sector. Employment in the sector has been relatively unaffected by the macro-economic performance of the economy as a whole, although the digital sub-sector has been more affected by economic headwinds than the creative sub-sector. The trend on economic output for the sector as a whole has shown a general increase with only minor downturns since the 1990s – firstly with the fall out from the dot-com bubble and secondly with the impact of the recession. Output across the sector has risen fairly consistently from 1990 until 2008, before falling with the onset of the recession, but is expected to rise over the remainder of the current decade. Employment growth has followed a similar path over the past few years. As we shall see, the number of jobs in the sector is expected to rise over the rest of the decade, but not as fast as output.

Figure 2.1 Trends in Employment and Output (Digital and Creative)

Source: Wilson and Homenidou (2011)

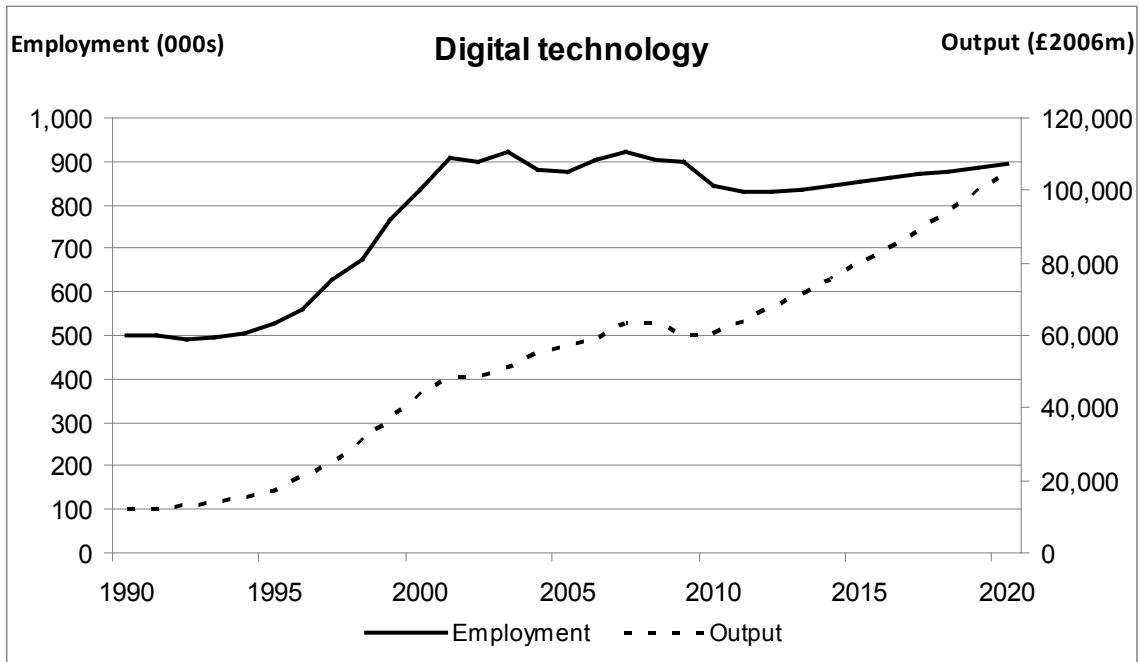
Definition: see Table 2.1

The trends and projections for the two sub-sectors are presented in Figures 2.2 and 2.3. Employment in the digital sub-sector increased rapidly in the second half of the 1990s, although since the early part of the 2000s it has fluctuated around 900,000. This is in contrast to the creative sub-sector, which has experienced a less rapid but more consistent increase in employment levels since 1990. For the UK as a whole average annual employment growth was slow in the decade to 2000 (0.1%) but accelerated to 2010 (0.4%).

Output in the digital sub-sector increased by over 400% between 1990 and 2008, and is projected to increase at a similarly fast pace between now and 2020. For the UK as a whole output increased by 47% between 1990 and 2008 and is forecast to increase by around 30% to 2020. Output in the creative sub-sector has grown at a slower pace than in the digital sub-sector, with output increasing by 90% between 1990 and 2008, although the rate of growth between 2010 and 2020 is projected to be very close to the rate in the digital sub-sector.

So the two sub-sectors have different trajectories: output in the digital sector is growing fast but employment is relatively flat, while in the creative sub-sector both output and employment are rising but at a steadier pace.

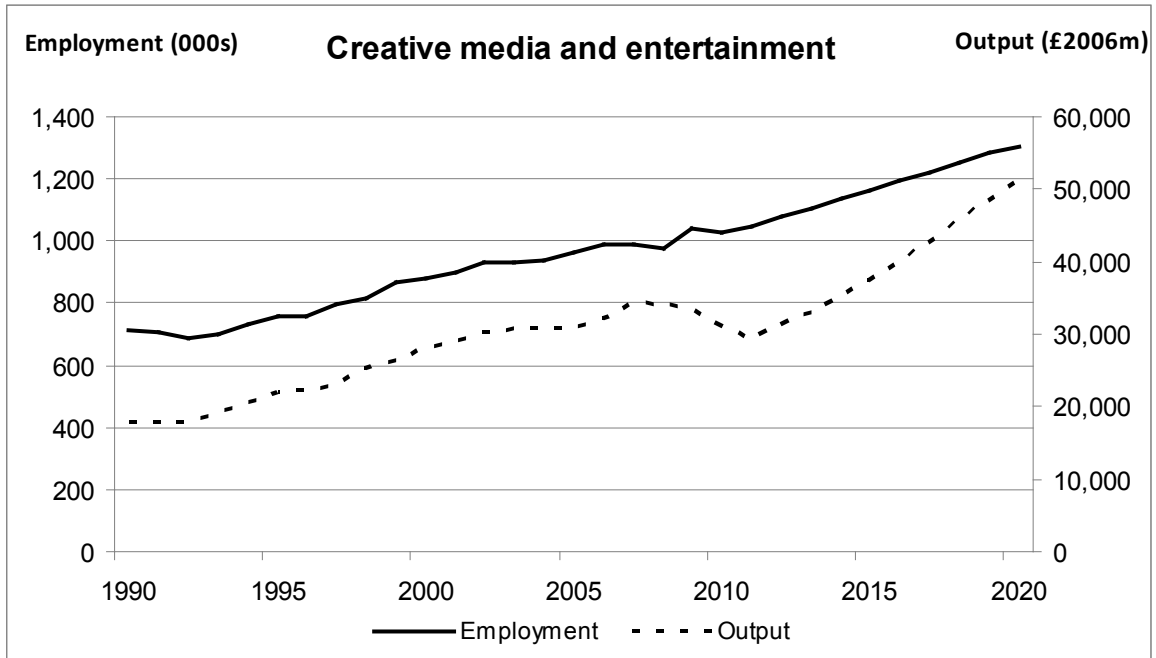
Figure 2.2 Trends in Employment and Output (Digital)



Source: Wilson and Homenidou (2011)

Definition: see Table 2.1

Figure 2.3 Trends in Employment and Output (Creative media and entertainment)



Source: Wilson and Homenidou (2011)

Definition: see Table 2.1

2.2 Employment structure

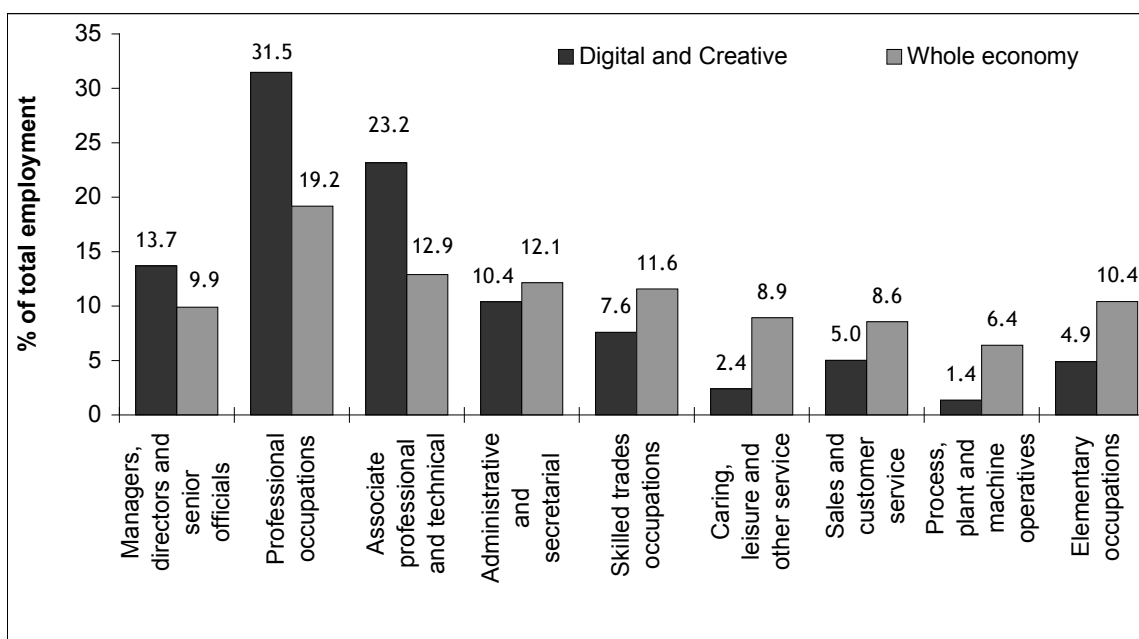
Jobs in the digital and creative sector tend to be high level and the workforce is generally well qualified and, in the digital sub-sector, predominantly male. In this section we look in more detail at the employment structure of the sector based on 2010 figures.

Employment by occupation and qualification level

The digital and creative workforce is concentrated in the higher level occupational groups, and is highly qualified, as Figures 2.4 and 2.5 show.

Nearly one third of workers in the digital and creative sector work in professional occupations, compared to one fifth of workers across all sectors, and the proportion of workers in associate professional and technical occupations, at 23 per cent, is also considerably higher than the overall proportion of 13 per cent (Figure 2.4). There are also an above average proportion of managers in the digital and creative sector. There are differences in the occupational profile of the two sub-sectors, with a higher proportion of professional workers in the digital technology sector (40 per cent, compared with 24 per cent in the creative and media sector), and a lower proportion of associate professional in the digital technology sector (17 per cent, compared with 28 per cent in the creative media sector).

Figure 2.4 Employment by Occupation, Digital and Creative, 2010

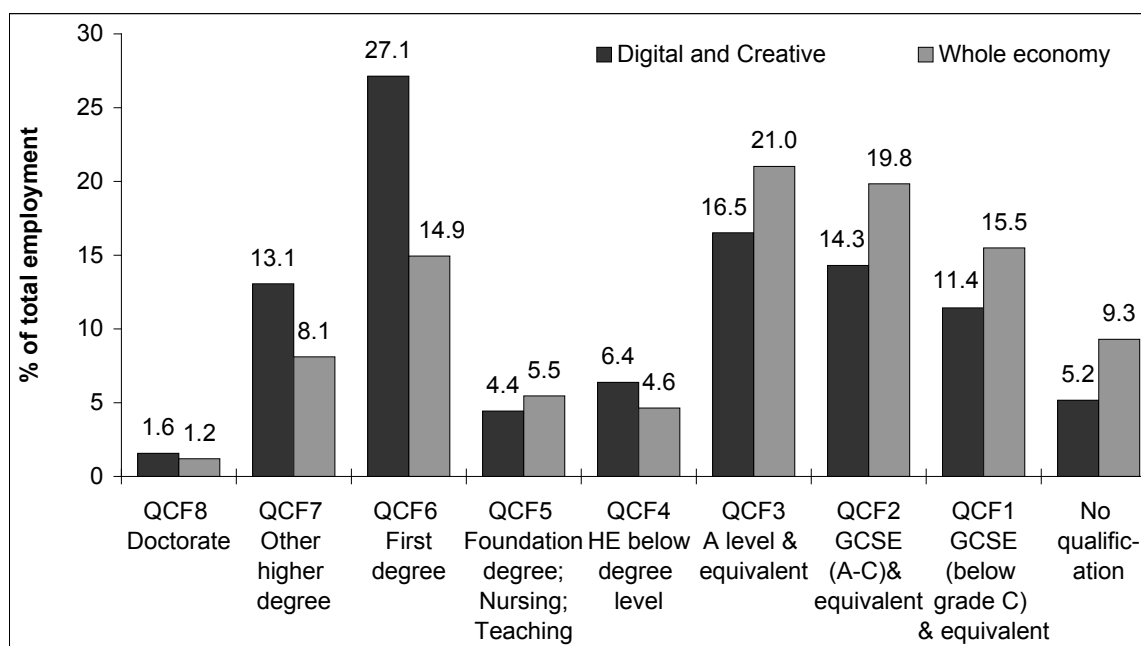


Source: Wilson and Homenidou (2011)

Definition: see Table 2.1

Turning to the qualification profile of the sector's workforce, over 40 per cent of workers are qualified to at least first degree level or equivalent, compared with 24 per cent of the workforce as a whole. More than a quarter of the sector's workforce has a first degree or equivalent (15 per cent across all sectors), and 15 per cent have a post-graduate qualification (nine per cent across all sectors). There is little difference between the two sub-sectors in their occupational profile, despite the different occupational structures.

Figure 2.5 Employment by Qualification, Digital and Creative, 2010



Source: Wilson and Homenidou (2011)

Definition: see Table 2.1

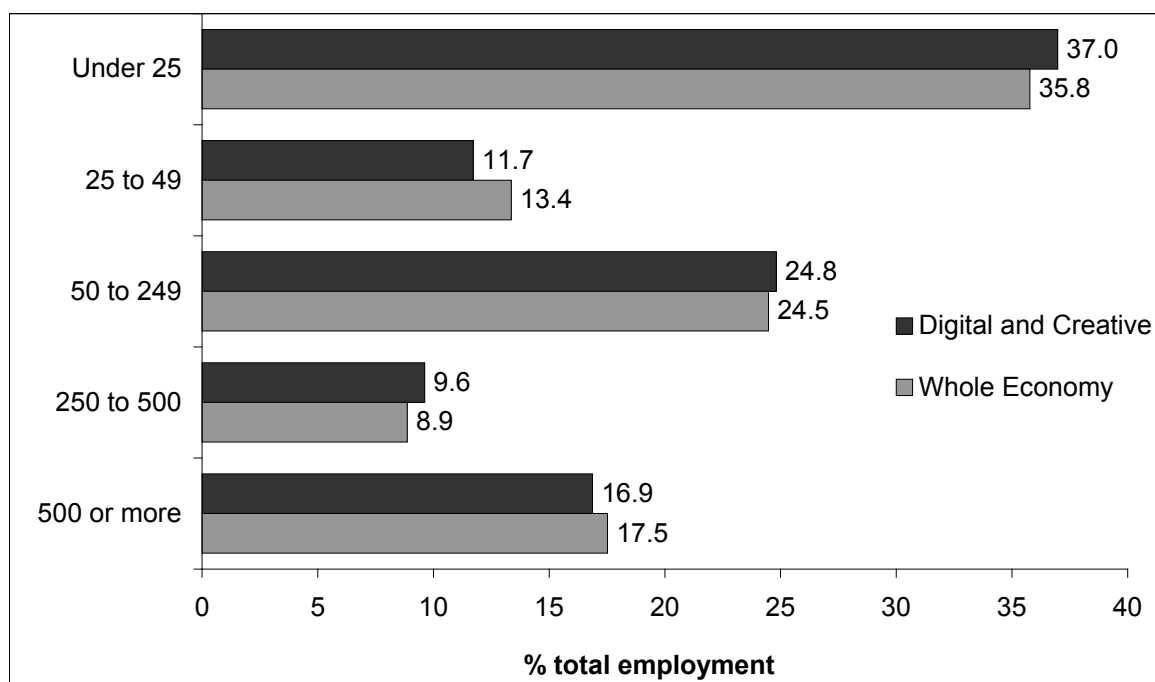
Employment by size of employer

There are 266,000 establishments in the sector, making up 10 per cent of all establishments in the UK (UKCES forthcoming b). The distribution of employment by the size of employer in the digital and creative sector is shown in Figure 2.6. The size profile is very similar to the profile across all sectors, with 37 per cent of workers in firms with fewer than 25 employees (36 per cent across all sectors), and 17 per cent of workers in large firms with 500 or more employees (18 per cent across all sectors).

Employment in the creative sub-sector is more concentrated among smaller firms than it is in the digital sub-sector – 40 per cent of creative employment is in small firms with fewer than 25 employees compared to 35 per cent of digital employment, and only 15 per cent of creative employment is in the largest firms with 500 or more employees compared to 19 per cent of digital employment (data from an average of the four quarters of the

2010 Labour Force Survey). Further evidence of the nature of the sector comes from data from the Inter-departmental Business Register which shows that 83 per cent of firms in the digital and creative sectors employ fewer than 10 people, compared with 74 per cent of firms across the economy as a whole. The relatively large number of sole traders/freelancers in the creative sub-sector in particular, which gives the creative sub-sector a particular dynamic (UKCES, 2010), is discussed further in section 2.6.

Figure 2.6 Size Structure of Employment (% of employment by employer size band)



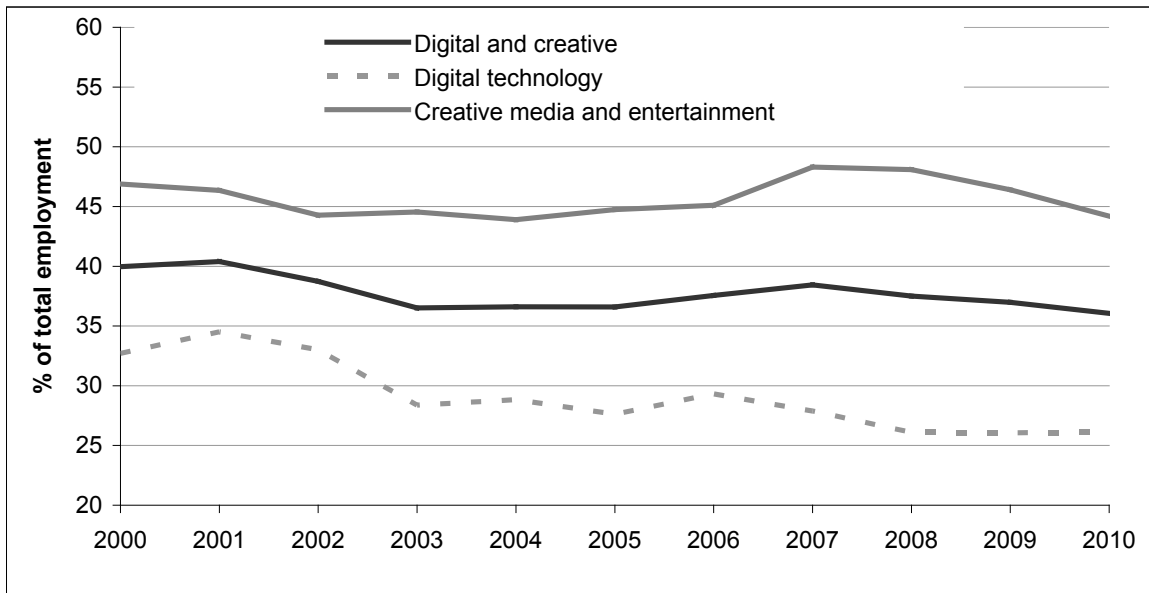
Source: Labour Force Survey, 2010 (average of four quarters)

The sector has a relatively high number of business start-ups, compared with other sectors indicating its vibrancy. Although there were a quarter more business closures than start-ups in 2009 in the digital sub-sector (UKCES forthcoming a), the number of start-ups outweighed the number of closures in the creative side of the sector (UKCES forthcoming b)

Employment by gender

Employment in the digital sub-sector is male dominated, and has been becoming increasingly so in the last few years shown in figure 2.7. The proportion of female workers in the digital sub-sector stood at 26 per cent in 2010, down from 33 per cent a decade earlier. On the creative side there is a much more balanced gender breakdown, with the proportion of women just under the overall average of 46 per cent. Across the sector as a whole, the proportion of female employment has fluctuated between 35 per cent and 40 per cent over the last ten years.

Figure 2.7 Proportion of female employment

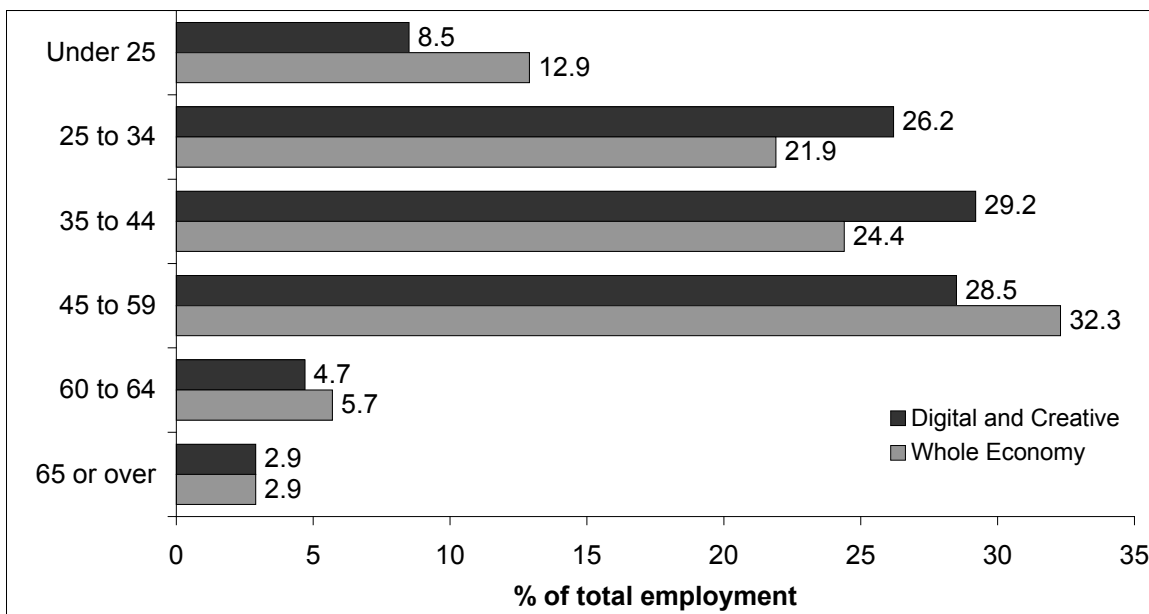


Source: Labour Force Survey, 2010 (average of four quarters)

Employment by age

Figure 2.8 shows the age structure of the digital and creative workforce in comparison with the structure across all sectors. Employment is concentrated among those aged 25 to 44, who make up 55 per cent of the sector’s workforce, compared to 46 per cent of all workers across the economy. There are relatively few young workers aged under 25 in the digital and creative sector, eight per cent compared to 13 per cent across all sectors.

Figure 2.8 Age Structure of Workforce



Source: Labour Force Survey, 2010 (average of four quarters)

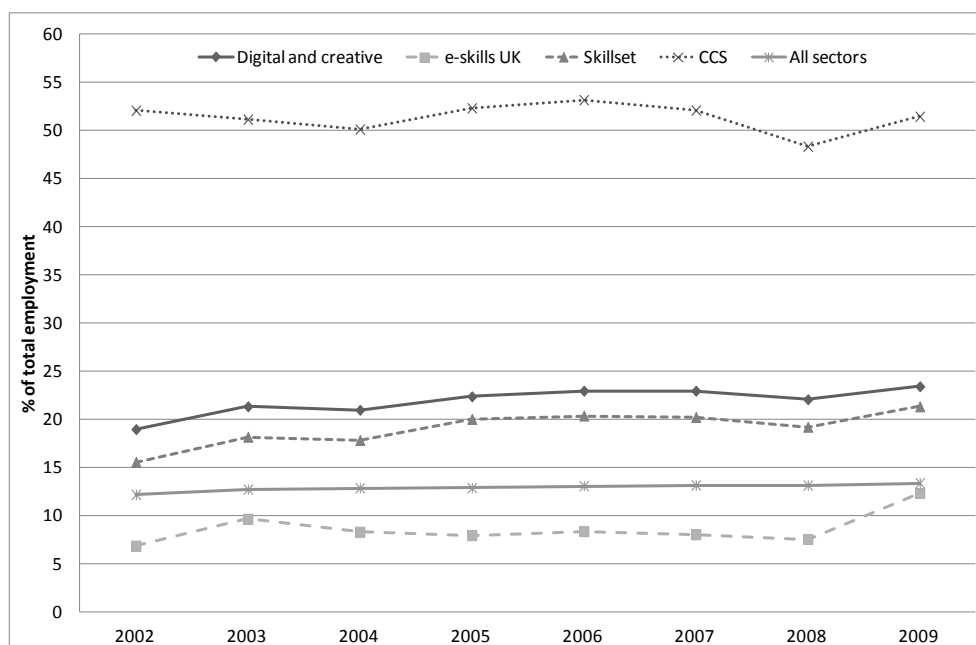
The digital technology sub-sector has an older age profile than the creative media and entertainment sub-sector, and the age profile in the former is getting older. The increasing need for hybrid technical/business capability, driven partly by globalisation, means the digital technology sector often favours workers with previous business experience over younger workers straight from education, and when employers do recruit leavers from education the preference is for graduates rather than school or college leavers; by contrast, many parts of the creative sector, such as advertising, music and design, have a young age profile with the majority of the workforce aged under 40 (e-skills UK et al., 2009).

2.3 Self-employment and working hours

There is a high incidence of self-employment in the digital and creative sector, compared to most other sectors and the economy as a whole, and the incidence of self-employment has been increasing in recent years. Self-employment accounts for nearly a quarter of total employment in the sector, compared to around 14 per cent across the whole economy (see Figure 2.9). There is substantial variation within the sector (by Sector Skills Council), with self-employment accounting for 31 per cent of the creative sector and 16 per cent of the digital technology sector (UKCES, forthcoming a and b).

The high proportion of self-employed workers in the sector presents a performance challenge for the sector, as self-employed workers are half as likely as employees to participate in work-related training or education (Meager et al., 2011). There are particular issues around fear of losing work through committing time to training in advance, and having to pay training fees themselves (UKCES, forthcoming b).

Figure 2.9 Incidence of self-employment



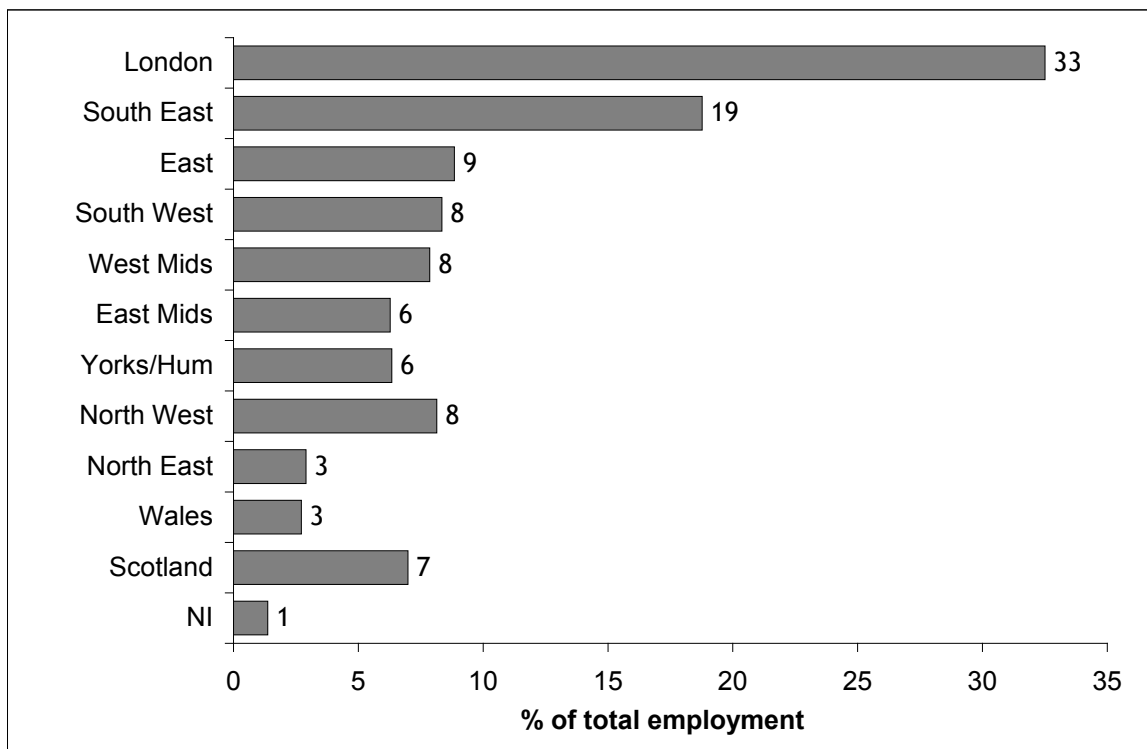
Source: Labour Force Survey; UKCES (2011)

There is a similar pattern when looking at part-time working, with a low incidence in the digital sub-sector, at around 10 per cent of the workforce compared to 26 per cent across all sectors, but a much higher incidence of part-time working in the creative sub-sector.

2.4 Distribution of Employment by Nation and Region

Figure 2.10 shows the geographical distribution of employment in the digital and creative sector. Nine out of ten workers in the sector are located in England with London and the South East accounting for over half of all workers in England, whereas across all sectors 85 per cent of workers are in England and just over a third of these are in London and the South East. Digital sector employment in London and the South East is split evenly between the two regions, while in the creative sub-sector the greatest concentration of jobs is found in London, which accounts for 40 per cent of all creative sector employment in England. Relatively few digital and creative workers are based in the North East of England, Wales (although there is a creative cluster in Cardiff), or Northern Ireland. There is a growing digital and creative sector in North West England, partly related to the BBC's decision to relocate a significant element of its facilities to Salford in Manchester.

Figure 2.10: Employment by nation and region for the digital and creative sector



Source: Wilson and Homenidou (2011)

2.5 International Standing of the Sector

The UK is in a strong position to take advantage of the opportunities of the digital and creative economy. Its levels of IT competitiveness are high and it has what has been described as ‘probably the largest creative sector in the world’ in relation to national GDP (Work Foundation, 2007).

The Economist Intelligence Unit’s (EIU) annual benchmarking (quoted in *e-skills et al.*, 2009) shows the UK to be 6th out of 66 countries in terms of global IT competitiveness in 2009, behind the US, Finland, Sweden, Canada and the Netherlands. Within the overall benchmarking, the UK’s best ranking was 3rd on the human capital indicator, behind the US and South Korea. An important element within this indicator was the capacity to develop the business skills as well as the mainstream IT skills of technology professionals.

The UK’s performance on other indicators was:

- ‘support for the IT industry’ (UK ranked 4th);
- ‘IT infrastructure’ (6th);
- ‘overall business environment’ (7th);
- ‘legal environment’ (11th); and
- ‘innovation’ (12th).

The UK’s relatively poor performance in terms of the last two indicators is attributed, in part, to differing approaches to protection of Intellectual Property. The EIU’s report points out that patent proceeding costs are up to five times higher in the UK than in Germany, and that these high costs can be prohibitive, especially for SMEs, and may also be a problem for the self-employed who are particularly common in the digital and creative sector (*e-skills UK et al.*, 2009).

International analysis undertaken by BIS suggests that the UK has a comparative advantage in the communications, and computer and information services sectors, and that the UK is relatively more specialised in these sectors than its G7 counterparts. However, average labour productivity in these sectors is below the levels in the US, Germany and France. Furthermore, research and development intensity in computer and related services is also below the G7 average (BIS, 2010).

Turning to the creative sectors, the UK is the largest producer of TV & Radio content in Europe, with only the US generating more value from TV exports. It has the largest publishing industry in Europe, and the third largest filmed entertainment market globally, after the USA and Japan. In 2008, almost one in six film viewings at cinemas globally was of a British film, equalling 15 per cent of the global box office (UK Film Council, 2009). Other world-leading creative sub-sectors include:

- Advertising. The UK is the third biggest market in the world after the USA and Japan, with London overwhelmingly chosen as the European hub for major agencies. The UK advertising market has the largest share of internet advertising revenue of any market in the world, including the USA, at 14 per cent (IPA, 2009).
- Music. The UK is the 4th largest producer, behind the US, Japan, Germany (Creative & Cultural Skills research). Digital sales account for 16 per cent of the UK music market, which is, in terms of proportion of domestic market, the third largest in the world (behind the US at 39 per cent and Japan at 19 per cent) (IFPI 2009).
- Design. The UK is currently rated as 4th in the world behind only the US, Japan and Korea (International Design Scoreboard: Initial Indicators of International Design Capabilities, IFM and University of Cambridge).

Exports from across the creative industries are estimated to be worth £8.9 billion annually to the UK economy, 10.6 per cent of all service sector exports (DCMS, 2011).

Around six per cent of people are employed in the digital and creative sector in the UK. This is a higher proportion than the average for all EU countries of four per cent (Eurostat, 2011). Only Iceland and Denmark at seven per cent have a greater proportion of their employment in the sector than the UK.

2.6 Conclusion

The digital and creative sector makes a significant contribution to the UK economy. Its output has been growing rapidly for the last two decades. There is a growing synergy between the two sectors as digital technology transforms the creative media industries. In addition to its direct contribution, better use of technology can underpin significant productivity gains across the economy as a whole.

In many aspects of the sector the UK is a world leader. However, although the sector has grown successfully in recent years it is not as productive as some of our major competitors. The sector has to run fast to keep pace with competitor economies in a world that is changing rapidly.

The structure of employment is different to that in the rest of the UK economy, with self-employment being more common, reflecting the dynamism of parts of the sector, and low levels of employment amongst women, particularly in the digital sub-sector. The creative workforce is on average younger and more likely to work for small organisations or be self-employed. However, the growing age of the digital workforce suggests that there may be a need to replace skills as the existing workforce retires.

The digital and creative sector workforce is highly skilled, which underpins the sector impressive productivity performance. The digital workforce is particularly dependent on professional and technical skills and there is a high proportion of associate professionals among the creative workforce. Developing this skill base will be crucial to generating further increases in productivity and competitiveness and to take advantage of the opportunities which lie ahead. In the next chapter we examine some of the key developments that will influence the sector over the medium term.

3 Key Developments in the Sector over the Medium Term

The previous chapter demonstrated the success the sector has experienced over the last few years. Its ability to continue that trajectory will depend on the sector's ability to capitalise on future technological and business developments, which means that skill levels have to keep pace.

In the short-term, the impact of the economic downturn will have implications for the sector's performance in the years to come whilst other issues which have been important for the industry in recent years will continue to present challenges and many will become increasingly important.

This section considers these key developments. Because of the differences between the two sub-sectors, the developments they face are considered separately.

3.1 Digital technology

Although the recession has affected all sectors, the employment of technology professionals has held up well, with the numbers increasing slightly between 2008 and 2009. The key reasons for this relatively strong performance include the adoption of increasingly flexible business models following the bursting of the dotcom bubble, the critical nature of technology systems for companies across all sectors, and the growing understanding of the potential of digital technology to help companies weather the downturn. Spending on software and services has been relatively resilient, compared to expenditure on hardware by both consumers and businesses, although small firms may suffer from limited capital availability.

Similarly prospects for the recovery are relatively good, not least because spending on the internet, television and mobile telephony is now regarded by most UK households as a higher priority than almost everything except food (Ofcom, 2009).

Investment, innovation and R&D

Private sector investment in IT is still rising despite the current economic conditions. Private sector investment in IT rose by nine per cent during the final quarter of 2010 and at £3.4bn the level of investment was eight per cent higher than during the final quarter of 2009 and only five per cent below the level recorded in the fourth quarter of 2007, i.e. the equivalent, pre-recessionary quarter (e-skills UK, 2011a).

Technological innovation is pervasive. New developments occur at a rapid pace. Moore's law (described by Intel executive Gordon E. Moore in a 1965 paper (Moore, G, 1965)) suggests that computing capacity doubles every two years and similarly other digital developments such as the number and size of pixels in digital cameras occur at a similar speed. Such innovation requires continual skill development among technology professionals and technicians and also has implications for technology users. Technological breakthroughs create opportunities to develop new products and services. Innovation also leads to new design and production and service delivery processes as well as cultural attitudes in the workplace and society towards new ways of working or collaborating.

Customers' needs and wants can better shape the services they use and products they consume if technology helps inform suppliers. And the ability of IT & Telecoms professionals to enable greater information about customer wants and provider capabilities is key. New horizons in terms of the technology (or product or service) is one aspect, but there are also new horizons in terms of changing tastes (i.e. markets). New, less capital intensive technologies like cloud computing and "Software as a Service" (SaaS) make innovation easier because it requires less up-front investment by a firm, and the development of innovative enabling technologies like these will in turn foster further innovations (e-skills UK, 2011b).

The sector is therefore not just reliant on ensuring that technical skills keep pace with these developments and drive continued innovation, but also that the workforce has the commercial and business skills to capitalise on technical change, to create new products and services and ways of working and to maintain its internationally competitive position.

Strategic role of management skills

There is very strong evidence that management is one of the most influential factors in achieving higher performance (Garrett et al., 2010), Management skills play a key role in how well digital firms can respond to the challenges presented above. In Chapter 2 we saw that the sector had a relatively high proportion of managers. The main development need for this group identified in the e-skills UK employer survey (e-skills UK, 2011b) is around programme management, supplier management, and service management and delivery at a senior level.

Other challenges

The data in Chapter 2 also indicated that the workforce in the digital sub-sector was considerably older on average than that in the creative sub-sector. Over the medium term, as the digital workforce ages and retires there will be an increasing need to attract new recruits to the sector to replace them (replacement demand) Similarly, as technology continues to develop at a rapid rate, skills and knowledge have to keep pace. To meet these demands the sector will need to draw on the widest pool of talent to maintain its global status.

3.2 Creative

Some parts of the creative sub-sector have been hit relatively hard during the recession, particularly TV and advertising. Advertising and public relations managers have been one of the fastest declining occupations since the start of the recession, recording a fall in numbers of 30 per cent (UKCES, 2010).

However, research (by Skillset and Creative and Cultural Skills) during 2009 and 2010 found that most employers were optimistic about growth prospects in the years ahead (Skillset and CCS, 2011). An underlying reason for this optimism is the opening up of new markets and new opportunities globally through digital communication and global supply networks. The value of global creative goods and services exports rose from \$227 billion in 1996 to \$424 billion in 2005, and this growth is likely to continue as the developing nations catch up with the West in terms of digital capability.

Domestically the 'experience' economy – live performances, live theatre, museum visits etc. – has grown throughout the last decade including through the recession, and people's consumption of entertainment, art and literature has continued to grow despite them cutting back on expenditure in other areas. Analysis of the sector's performance following the 1990s recession showed that the cultural sector performed better than the economy as a whole (UKCES, 2010).

Investment, innovation and R&D

The creative sector is characterised as having high rates of innovation. Research from Nesta shows the creative industries are one of the most innovative sectors in the economy. However, it has been challenging to measure innovation in the creative industries because of both the pace of change and the changing nature of innovation, which is embedding the innovations of creative businesses across other sectors of the economy, and expanding their future economic reach and potential. Detailed case studies show that digitisation is driving innovation in the creative industries, and firms who are investing heavily in research and development (R&D), and devoting large numbers of their staff to technology intensive activities are benefiting most from this digital revolution (Nesta 2010).

One approach to help foster innovation in the sector is the promotion of clusters. These can take the form of individual sub-sector or complementary sub-sectors brought together through value chain linkages and shared infrastructures. The policy challenge is to identify existing clusters as building clusters up from scratch is far more difficult, and to help remove barriers to collaboration through the use of public services, training and higher education (Nesta, 2010²).

The skills challenge is to continually renew the sectors skill base to both help generate and make the most of the high rates of innovation.

Links across the sector

² The research identified clusters of creative industries across the country using a variety of data and conducted detailed case studies in four locations including surveys of creative sector employers and employers in related sectors

The digital environment is fundamentally driving the business models of companies in the creative industries. There is rapid movement to a world where creative content is conceived, published, distributed, advertised and consumed digitally. The online environment erodes geographic boundaries and is causing a revolution for both producers and users. Ubiquity of broadband coverage, the availability of high quality mobile devices and the interactivity offered by Web 2.0 have changed the way individuals consume content.

Businesses using traditional business models and linear value chains from the analogue age are increasingly finding themselves ill-equipped to succeed. For creators of content, new 'digital' business models are increasingly viewed as the future in terms of both production and revenue. However, control over assets is problematic, with traditional approaches to copyright and intellectual property rights not necessarily effective in the online environment. Peer sharing and piracy are significantly challenging content creators' ability to earn from their own intellectual property. Creating sustainable businesses in a world where many expect unlimited access to content without being charged is a major challenge.

'The good thing is we're sitting on the hottest currency in the digital age – music. Lots of the Web 2.0 destinations are driven by music - MySpace, YouTube, there are tons of those destinations. The bad news is it's damn hard to make money.' Marcel Engh, Sony Music Europe, 2009 (e-skills et al., 2009)

The role of skills in overall competitiveness

The extent and pace of innovation is a significant, if not the biggest, driver of skill needs in the sub-sector. Not only does the workforce need the creative skills to generate content, but also the business skills to make money under the new business models. The ability to create sustainable business models by monetising intellectual property in a digital environment are critical to survival. This depends on business skills, understanding of intellectual property legislation globally, and a grasp of the strategic potential of technology. An additional skill need is the ability to understand and exploit digital technological advances, and new skills are needed to meet demand for quality content on *any* platform.

Strategic role of management skills

Management skills play a key role in how well creative firms respond to the challenges presented above, and there is strong evidence across all sectors that management is a key influence in achieving higher performance (Garrett et al., 2010). Management and leadership skills to take advantage of and monetise digital content in the new business models are a priority for the sector. They are also important in relation to project and production management for multi-platform development, and gaps in negotiation and leadership skills are frequently associated with the challenges of managing the change from traditional to digital methods of distribution. The sector has to compete with the rest of the economy for generic management skills.

3.3 Conclusion

Investment in research and development and innovation will underpin the future success of the sector especially as the synergies between digital technologies and creative content and activities continue to grow exponentially.

These developments create rapidly changing sets of skills needs to work with new technologies and deliver creative content at a technical and professional level. At the same time there is a need to manage the process of development and innovation which includes the skills associated with managing projects, protecting intellectual property and commercialising innovation. The link between these two skill sets is sometimes referred to as being 'T' shaped (see for example UKCES forthcoming b), ie having the technical depth and the commercial breadth to maximise business opportunities. On top of both of these broad skill sets is the need to lead and manage at a strategic level, to set goals, co-ordinate activity and ensure performance and delivery.

The next chapter will look at some of the factors affecting the demand for skills in the future and the implications for what skills will be required in more detail.

4 Employment and Skill Demand in the Sector

The last chapter examined some of the key developments across the sector and drew out the implications for skill demand in general terms. In this chapter we look in more detail at other factors affecting the demand for skills in the years ahead

4.1 The Changing Demand for Employment

As we found in Section 2, employment in the digital and creative sector has experienced only a minor fall since the onset of the recession. However the share of self-employment has been increasing, driven in part by people who are made redundant from the sector setting up as freelancers. Between 2002 and 2009, the self-employed share of employment in the digital and creative sector has increased from 19 per cent to 23 per cent. This is compared to growth in self-employment across all sectors from 12 per cent in 2002 to 13 per cent in 2009.

4.2 Factors Affecting the Demand for Skills

The National Strategic Skills Audit (UKCES, 2010) provides a common framework to identify the drivers of change that will impact on the in the UK in the future. The drivers indicate the nature and direction of travel and provide a broad analysis to help reveal the implications for jobs and skills. These drivers are interdependent and their dynamic interplay means they may mitigate or reinforce each other.

In discussing the key developments in the sector, the previous chapter alluded to some of the drivers. This section uses the framework to draw out the implications of these drivers for the demand for skills in the digital and creative sector in more detail.

Policy, regulation and legislation

Government policy, regulation and legislation (locally, regionally, nationally and internationally) have implications for the sector's demand for skills:

- Public IT procurement policy can have an impact on skill levels, training and innovation in contractor companies.
- Regions are increasingly focused on digital and creative industries and skills as central to economic strategy and there have been a number of regional and local policy initiatives aimed at boosting activity in the sector, for example those being pursued by Local Enterprise Partnerships (LEPs).

- Possible changes to intellectual policy legislation may have an impact on creative firms' ability to make money from their content.

Technology

Research with ICT employers conducted on behalf of e-skills UK (e-skills UK, 2011) has identified three broad groups of key technology trends which will impact on future skill needs in the digital sub-sector, over differing time horizons.

Immediate Issues are those that will have a major impact over the next 1-3 years and are likely to have an impact on most companies. These include:

- Security and data protection – increasing use of electronic channels, partly as a result of greater use of personal IT devices, increases the opportunity for theft and illegal activities. IT professionals will need skills to develop security solutions and manage risk, and need to keep up to date with new security schemes and policies through research.
- Cloud computing – delivering internet-based services in real time, through web-based tools or applications users can access through a web browser, cloud computing can increase business agility and lower costs. Project management and integrated solutions management skills will be required to realise these potential advantages, alongside technical skills around architecture, infrastructure and networking.
- Communication and IT convergence – involving the move from hardware to software intensive platforms, as devices are integrating more into day-to-day work eg smartphones. Security maintenance skills will be the main priority for employers, followed by technical expertise in the new technologies.

Developing Issues are those that are expected to occur over the medium term. They could have a widespread impact on the sector and beyond or they may affect one sub-sector in particular. 'Developing' does not necessarily mean new as some of these issues have been emerging for some time but others will be new issues for the sector. Developing issues include:

- Green IT – enhancing the environmental performance of the sector and its users through sustainable IT. IT professionals will need a range of technical skills focused around power management and environmental impact assessment to design and implement IT systems and infrastructure while minimising their environmental impact.

- Transformation through IT – the ever expanding role of technology will enable transformation of functions such as customer relationships, sales and procurement through bringing together business people and technologists to address business issues. IT professionals will need the business skills to identify business issues and strategic challenges, and also the interpersonal skills to deal with people across the business to bring about change.
- Information and analytics – use of business information and intelligence to gain insight into performance and customer needs and implement appropriate responses. For business to benefit from the competitive advantage their intelligence holds, they need the ability to generate, gather and analyse data, and hence staff will need skills in modelling, simulation and analytics. Business will also need to integrate their different analytical operations, and draw out the lessons that can help shape their overall business strategy.

Horizon Issues are wider, ongoing issues, impacting at different times, on different businesses, but not affecting a majority of businesses all at once. These are likely to arise over a longer time-frame than developing issues, and include:

- Pool of talent/gender balance – enrolments in IT courses continue to decline and women remain unconvinced about a career in IT, but the rapid projected employment growth will mean that employers will need to explore untapped labour pools to attract sufficient numbers of high quality recruits. The sector needs not only a vibrant, well-skilled recruitment pool but also more innovative and skilful approaches to recruitment, workforce development and HR management to secure the technical, business, design and innovation skills needed for the future.
- Backshoring – bringing services back to the UK when offshoring delivery overseas proves unsuccessful. This is not new technology, and nor is it the norm, but where it does happen employers need to recruit the right people. IT professionals will need the business skills to deal with internal and external clients, and manage teams, to handle the disruption caused, and the security skills to ensure the business' security is protected. This is more likely to be an issue for larger firms than smaller ones.
- Industrialisation of technology delivery – increasing automation and standardisation of processes and services in the IT industry drives a need for common standards and frameworks that are adhered to as technology operates on a larger and larger scale. IT professionals will require specific skills in solution design and the ability to design and re-engineer business processes, and also the skills to manage customer account and relationships..

Many of these future trends have similar, cross-cutting skills implications:

- **Security skills** – in addition to having an immediate impact on the security and data protection theme, security skills cut across a number of other themes, for example off-site data storage for cloud computing systems, and issues about data transfer as IT and communications devices converge.
- **Business skills** – increasingly, technical skills alone are not enough for technology professionals and they must have core business skills, for example managing projects and change, and workforce planning and development.
- **Technology specific skills** – high level technical knowledge is central to nearly all future trends. Skills in power management and thermal solutions are vital in making IT greener. Cloud computing will require IT professionals to have a deep understanding of a variety of technical issues, as will data security.
- **Inter-personal skills** – as IT services become more embedded in everyday life, IT professionals need to better understand customer challenges and consumer choices.
- **Analytical and research skills** – a vital component of connecting information and technology to business problems, analytics also underpin a business' ability to innovate.

Across the creative media and entertainment sub-sector, there is recognition of the dramatic changes brought about by the rapid growth of the digital environment. Sectors making use of developments in digital media include creative and cultural industries, particularly broadcasting, as well as online gaming industries. In a related area, the growth of e-commerce technologies is affording small craft-based enterprises access to a global market place (Wilson, 2009). Several analyses conclude that the leading position of the UK broadcasting industry and the potential expansion of access to digital media has not yet been fully exploited, as well as the potential for growth across other sub-sectors within the creative and cultural sectors (Clifton et al, 2009; The Work Foundation, 2007). This may be aided by improving ICT and digital literacy among workers in these sectors (UKCES, 2010).

Identified skills needs in the creative sub-sector as a result of increased digitisation include (UKCES forthcoming b):

- **Multi-skilling:** an understanding of different technology platforms and their impact on content development and digital work flow, and new approaches to working in cross-functional creative/technical teams within and across companies.
- **Multi-platform skills:** the creative and technical skills to produce content for distribution across all potential platforms, and the ability to understand and exploit technological advances.

- **Management and business skills:** especially project management for multi-platform development; the hybrid skills combining effective leadership with innovation, creativity and understanding of technology, and the analytical skills to understand audience interests and translate it into business intelligence.
- **IP and monetisation of multi-platform content:** understanding of intellectual property legislation to protect from piracy, and exploiting intellectual property internationally to take full advantage of emerging markets.

In addition to these broad needs, there are specific skills needs in broadcast engineering, archiving, sales/marketing, supply chain management, HR; also particular recognition of the needs of freelancers on whom so much of the creative sector depends.

Globalisation

Although the UK digital sub-sector is ranked highly in terms of international comparisons, the sector is facing increasing global competition, and the competitiveness of the UK's IT industry has dropped from 3rd in the world to 6th in the last year (quoted in e-skills *et al.*, 2009).

As a result of globalisation, there is a complex picture of major restructuring and skills shift underway in the technology workforce. The sourcing of certain IT activities from well skilled, lower cost countries (geosourcing) is now well established and is expected to continue. This gives rise to challenges in the development pathways for new recruits, as many of the traditional entry level roles are less prevalent in the UK. However, globalisation also facilitates growth: lower development and delivery costs make more business cases for technology-enabled projects viable. This is supporting the continued growth in IT professional employment in the UK, with particular demand for high level skills.

Globalisation offers significant opportunities for the creative industries, including:

- Growing potential markets for UK-produced content in all formats, across all media;
- An increasing range of foreign competitors with access to the UK market;
- Increasing potential for sourcing services from the UK to overseas ("off shoring").

The emerging economies of India and China will have the biggest impact on the UK industry, as their growing populations ensure they maintain their emerging roles as both suppliers and markets, although the current thinking is to treat them as key suppliers in the short term, and key markets only in the longer term. China now has more people in higher education than the US, and both countries are boosting the supply of highly educated workers, but incomes have a long way to rise before consumption of content will come close to Western levels.

The creative sector is already a significant exporter and this growth in emerging economies presents major opportunities to increase exports. However, globalisation also provides threats as firms can become more footloose in response to the incentives offered by different governments to relocate their business.

Consumer demand

Consumer spending patterns should ensure that prospects for the recovery are relatively good in the sector, not least because spending on the internet, television and mobile telephony is now regarded by most UK households as a higher priority than almost everything except food (Ofcom, 2009).

Domestically the 'experience' economy – live performances, live theatre, museum visits etc. – has grown throughout the last decade including through the recession, and people's consumption of entertainment, art and literature has continued to grow despite them cutting back on expenditure in other areas.

Environment/low carbon agenda

Environmental considerations are now at the core of many consumer brands and firms' operations decisions. Digital technology is both part of an environmental problem and central to environmental solutions. Addressing environmental concerns in a commercially sustainable way is demanding new skills, from technical design of power management (smart grids) through to the development of new services to assess environmental metrics (e-skills UK et al., 2009).

Demographic change

The demographic trend of fewer young people coming through the education system over the next decade may bring challenges to those parts of the creative sub-sector that rely on a young workforce. This will also be a concern for the digital sub-sector which will need to tap into young people as a source of labour, in addition to experienced people in the labour market, to meet its demand for staff. Digital employers will also need to be

aware of opening up recruitment channels to women, to address the gender imbalance in the sector and maximise potential labour pools.

4.3 Changing Patterns of Skill Demand

Table 4.1 presents the projected changes in employment demand for the digital and creative sector based on the Working Futures 2010-20 forecasts. Employment in the sector is projected to grow by 17.5 per cent between 2010 and 2020, more than three times the projected total employment growth across all sectors of 5.1 per cent. Most of the growth is expected to be in the creative sub-sector. Employment in digital technology is projected to increase by 6.0 per cent, and employment in creative media and entertainment is project to increase by 26.9 per cent.

Total employment in the higher occupational groups (managers, directors and senior officials, professional occupations and associate professional and technical occupations) is expected to increase over the period 2010 to 2020 by 23 per cent. This is compared to 15 per cent for all sectors (see Table 4.1). These increases are consistent with the drivers of skills demand and the key challenges facing the sector discussed above.

In addition to the growth in employment among the higher occupational groups there will also be increasing employment opportunities among caring, leisure and other service occupations³ and elementary occupations⁴. Demand for caring, leisure and other service occupations is projected to increase by 33 per cent over the 10 years to 2020 (compared to 11.5 per cent for all sectors) but the absolute change in employment in this occupation is relatively small at only 15,000 jobs. Demand for elementary occupations is projected to increase by 20.9 per cent (compared to 3.2 per cent for all sectors) with 19,000 additional workers in the sector. There is projected to be a small increase in sales and customer service occupations, although their share of total employment is expected to decrease (see Table 4.1).

Demand for administrative and secretarial workers, and skills trades occupations, is expected to decrease between 2010 and 2020. Among administrative and secretarial workers the net change in employment is estimated to be 4,000 jobs or a 2.3 per cent decrease (compared to a decrease of 10.5 per cent for all sectors) while among skills trades occupations the decrease is slightly larger, at 8,000 jobs or a 5.5 per cent decrease (compared to a decrease of only 0.1 per cent for all sectors).

³ Caring, leisure and other service occupations in the digital and creative sector include job roles such as housekeepers and caretakers.

⁴ Elementary occupations in the digital and creative sector include cleaners, office juniors, cinema/theatre attendants, messengers, storemen and labourers.

Table 4.1 Changing Pattern of Skill Demand

Digital and Creative	2010	2015	2020	2010	2015	2020	2010-2020		2010-2020
Employment Growth	Numbers (000s)			% shares			Change (000s)	Change (%)	All sectors change (%)
Managers, directors and senior officials	256	286	321	13.7	14.2	14.6	65	25.2	18.0
Professional occupations	589	647	724	31.5	32.1	32.9	134	22.8	14.9
Associate professional and technical	434	480	533	23.2	23.8	24.2	99	22.9	14.0
Administrative and secretarial	195	191	190	10.4	9.5	8.7	-4	-2.3	-10.5
Skilled trades occupations	142	135	134	7.6	6.7	6.1	-8	-5.5	-6.5
Caring, leisure and other service	45	52	60	2.4	2.6	2.7	15	33.4	11.5
Sales and customer service	94	96	101	5.0	4.8	4.6	7	7.2	0.1
Process, plant and machine operatives	26	25	25	1.4	1.2	1.2	0	-1.0	-10.9
Elementary occupations	92	102	111	4.9	5.1	5.0	19	20.9	3.2
All occupations	1,872	2,013	2,199	100.0	100.0	100.0	327	17.5	5.1

Source : Wilson and Homenidou (2011)

Definition: see table 2.1

Sub-sector variation

Tables 4.2 and 4.3 show the changing patterns of skill demand separately for the digital and creative sub-sectors.

The net change in employment is projected to be much greater in the creative media and entertainment sub-sector than in the digital technology sub-sector, with increases in total employment of 27 per cent and six per cent respectively compared to five per cent for all sectors. However, the bulk of the increases in total employment will be among the higher level occupational groups. Whilst some other occupations in the creative sub-sector will experience small growth, no occupation is expected to experience a contraction. This is in contrast to the digital sector where administrative and secretarial, skilled trades, sales and customer service, and process, plant and machine operative occupations are expected to contract,

Table 4.2 Changing Pattern of Skill Demand – Digital sub-sector

Digital technology	2010	2015	2020	2010	2015	2020	2010-2020		2010-2020
	Numbers (000s)			% shares			Change (000s)	Change (%)	All sectors change (%)
Employment Growth									
Managers, directors and senior officials	136	145	157	16.1	16.9	17.6	21	15.8	18.0
Professional occupations	338	348	371	40.2	40.8	41.6	33	9.7	14.9
Associate professional and technical	147	150	157	17.5	17.5	17.6	10	7.0	14.0
Administrative and secretarial	58	53	50	6.9	6.2	5.5	-8	-14.5	-10.5
Skilled trades occupations	72	67	63	8.5	7.8	7.1	-9	-12.1	-6.5
Caring, leisure and other service	11	13	14	1.4	1.5	1.6	3	25.1	11.5
Sales and customer service	54	53	53	6.4	6.2	6.0	0	-0.8	0.1
Process, plant and machine operatives	12	11	11	1.4	1.3	1.2	-1	-6.4	-10.9
Elementary occupations	14	15	15	1.7	1.7	1.7	1	6.0	3.2
All occupations	843	853	893	100.0	100.0	100.0	50	6.0	5.1

Source : Wilson and Homenidou (2011)

Definition: see table 2.1

Table 4.3 Changing Pattern of Skill Demand – Creative sub-sector

Creative media and entertainment	2010	2015	2020	2010	2015	2020	2010-2020		2010-2020
	Numbers (000s)			% shares			Change (000s)	Change (%)	All sectors change (%)
Employment Growth									
Managers, directors and senior officials	120	142	163	11.7	12.2	12.5	43	35.9	18.0
Professional occupations	251	299	352	24.4	25.8	27.0	102	40.5	14.9
Associate professional and technical	286	330	376	27.8	28.5	28.8	89	31.1	14.0
Administrative and secretarial	137	138	141	13.3	11.9	10.8	4	2.9	-10.5
Skilled trades occupations	70	68	71	6.8	5.9	5.4	1	1.2	-6.5
Caring, leisure and other service	33	38	46	3.2	3.3	3.5	12	36.2	11.5
Sales and customer service	40	43	47	3.9	3.7	3.6	7	18.0	0.1
Process, plant and machine operatives	14	14	15	1.4	1.2	1.1	0	3.5	-10.9
Elementary occupations	77	87	96	7.5	7.5	7.3	18	23.6	3.2
All occupations	1,029	1,160	1,306	100.0	100.0	100.0	277	26.9	5.1

Source: Wilson and Homenidou (2011)

Definition: see table 2.1

Table 4.4 shows the projected changes in employment by qualification level in the digital and creative sector. In 2020 over half (52 per cent) of the workforce is projected to be qualified at first degree level or above, compared to 42 per cent in 2010. This trend of up-skilling in the sector exceeds that expected in the economy with 34 per cent of the UK workforce qualified to first degree level or above in 2010 rising to 43 per cent in 2020. There are projected to be small increases in the numbers of workers in the sector qualified at higher education below first degree level equating to nine per cent compared to 13 per cent for the whole economy. Decreases of eight per cent are expected in the demand for GCSEs A-C and in A-levels of 26 per cent in the sector compared with declines of two and 19 per cent respectively in the economy.

The pattern of demand for qualifications in the sector departs most notably from that in the whole economy at the low end of the qualifications spectrum. Demand for low skilled workers (QCF 1) in the sector is forecast to increase by 23 per cent in contrast to 10 per cent for the whole economy. However, the increased demand in the sector for those with no formal qualifications by 2020 (nine per cent) is in direct contrast to forecast decline in demand in the whole economy of -25 per cent.

Based on this analysis (Wilson and Homenidou, 2011) the sector is likely to experience a greater increases in demand for high and low skills than the economy as a whole and greater decreases in intermediate skills. This suggests the trend of polarisation or 'hollowing out' is therefore expected to occur faster in the digital and creative sector than in other sectors on average. However, it is important to consider how this pattern may vary sub-sector.

Table 4.4 Changing Pattern of Skill Demand by qualification level

Digital and Creative	2010	2015	2020	2010	2015	2020	2010-2020		2010-2020
Employment Growth	Numbers (000s)			% shares			Change (000s)	Change (%)	All sectors change (%)
QCF8 Doctorate	29	39	52	1.6	1.9	2.4	23	78.0	67.0
QCF7 Other higher degree	245	339	443	13.1	16.8	20.1	198	81.0	67.7
QCF6 First degree	508	578	641	27.1	28.7	29.2	133	26.3	25.0
QCF5 Foundation degree; Nursing; Teaching	83	82	92	4.4	4.1	4.2	8	10.2	-9.9
QCF4 HE below degree level	119	124	130	6.4	6.2	5.9	11	9.3	11.5
QCF3 A level & equivalent	309	264	228	16.5	13.1	10.3	-82	-26.4	-14.4
QCF2 GCSE(A-C) & equivalent	268	253	245	14.3	12.6	11.2	-22	-8.4	-3.6
QCF1 GCSE(below grade C) & equivalent	214	237	262	11.4	11.8	11.9	48	22.7	10.1
No Qualification	97	97	105	5.2	4.8	4.8	9	8.9	-28.7
Total	1,872	2,013	2,199	100.0	100.0	100.0	327	17.5	5.1

Source: Wilson and Homenidou (2011)

Definition: see table 2.1

Tables 4.5 and 4.6 show the projected employment changes by qualification separately for the two sub-sectors. Linked to the rise in higher occupations highlighted in Table 4.3, increased demand for people qualified to first degree level or higher is more marked in the creative sub-sector than the digital sub-sector, although there will be stronger demand for foundation degrees by digital firms than by creative ones. The digital sub-sector is projected to need an additional 105,000 people qualified to first degree level or above by 2020 (an increase of 29 per cent), while the creative sub-sector is projected to need around 249,000 additional people (an increase of 59%). These changes compare with an increase of 42 per cent in the demand for those qualified to the same level in the whole economy. Demand for high level skills is therefore likely to be much greater in the creative sub-sector.

Demand for intermediate qualifications (QCF 4, 3 and 2) in the digital sub-sector is expected to fall by 30 per cent by 2020, while in the creative sub-sector demand for these qualifications is projected to be stable to 2020. This compares to an expected decline of nearly nine per cent for the UK as a whole.

Table 4.5 Changing Pattern of Skill Demand by qualification level, Digital sub-sector

Digital technology	2010	2015	2020	2010	2015	2020	2010-2020		2010-2020
Employment Growth	Numbers (000s)			% shares			Change (000s)	Change (%)	All sectors change (%)
QCF8 Doctorate	13	17	22	1.6	2.0	2.5	9	64.2	67.0
QCF7 Other higher degree	109	145	184	12.9	17.0	20.6	75	68.8	67.7
QCF6 First degree	240	251	261	28.4	29.4	29.2	21	9.0	25.0
QCF5 Foundation degree; Nursing; Teaching	37	42	47	4.4	4.9	5.2	10	26.3	-9.9
QCF4 HE below degree level	64	60	59	7.6	7.1	6.6	-5	-8.1	11.5
QCF3 A level & equivalent	138	105	79	16.4	12.2	8.9	-59	-42.6	-14.4
QCF2 GCSE(A-C) & equivalent	112	95	83	13.4	11.1	9.3	-30	-26.3	-3.6
QCF1 GCSE(below grade C) & equivalent	95	103	115	11.3	12.1	12.9	19	20.3	10.1
No Qualification	34	37	44	4.0	4.3	4.9	10	28.2	-28.7
Total	843	853	893	100.0	100.0	100.0	50	6.0	5.1

Source : Wilson and Homenidou (2011)

Definition: see table 2.1

Table 4.6 Changing Pattern of Skill Demand by qualification level, Creative sub-sector

Creative media and entertainment	2010	2015	2020	2010	2015	2020	2010-2020		2010-2020
Employment Growth	Numbers (000s)			% shares			Change (000s)	Change (%)	All sectors change (%)
QCF8 Doctorate	16	22	30	1.5	1.9	2.3	14	89.8	67.0
QCF7 Other higher degree	136	194	259	13.2	16.7	19.8	123	90.8	67.7
QCF6 First degree	268	328	380	26.1	28.3	29.1	112	41.7	25.0
QCF5 Foundation degree; Nursing; Teaching	46	41	45	4.5	3.5	3.4	-1	-2.8	-9.9
QCF4 HE below degree level	56	64	72	5.4	5.5	5.5	16	29.2	11.5
QCF3 A level & equivalent	171	159	148	16.6	13.7	11.4	-23	-13.4	-14.4
QCF2 GCSE(A-C) & equivalent	155	158	162	15.1	13.6	12.4	7	4.6	-3.6
QCF1 GCSE(below grade C) & equivalent	119	134	148	11.5	11.5	11.3	29	24.5	10.1
No Qualification	63	60	62	6.1	5.2	4.7	-1	-1.5	-28.7
Total	1,029	1,160	1,306	100.0	100.0	100.0	277	26.9	5.1

Source: Wilson and Homenidou (2011)

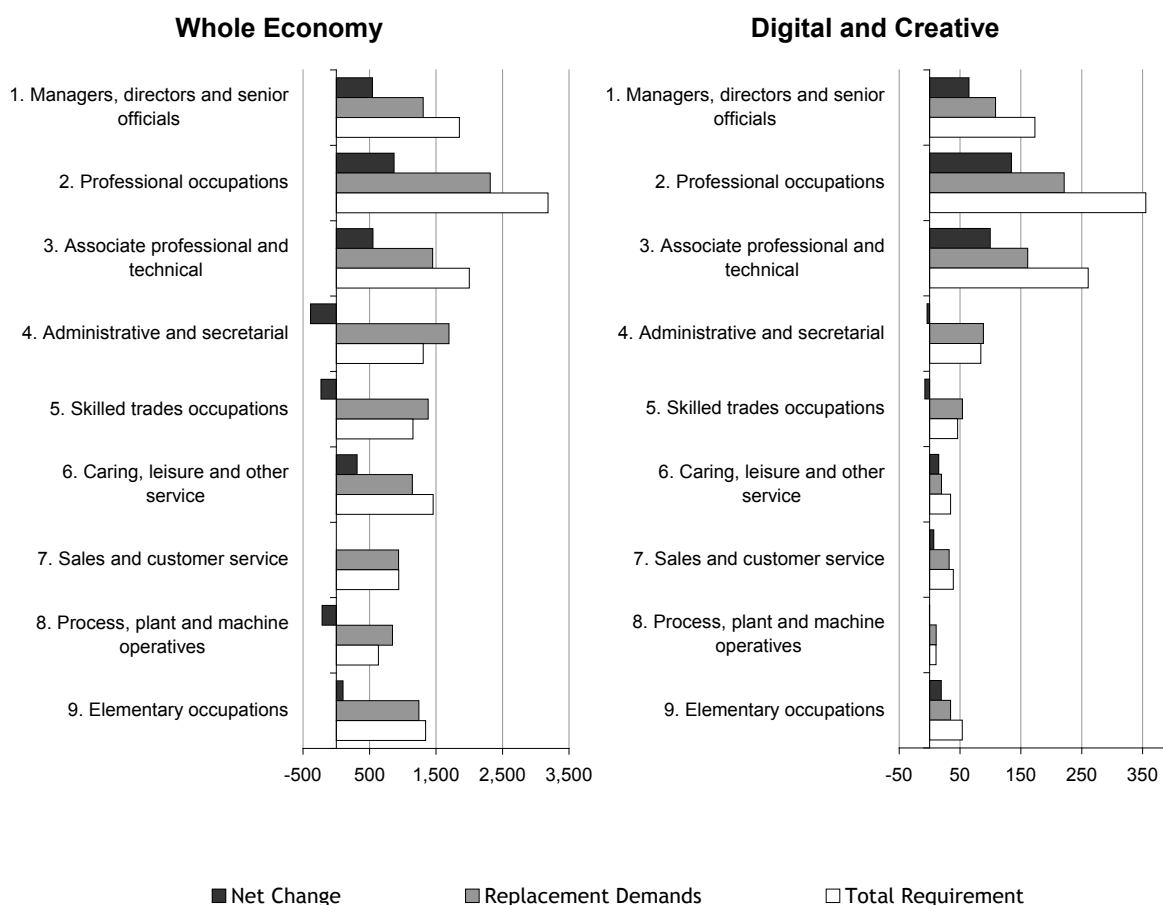
Definition: see table 2.1

4.4 Replacement Demand

Figure 4.1 shows, in addition to the net employment changes, replacement demand (i.e. demand generated by the need to replace existing employees leaving the sector due to retirement, death, etc) and total employment requirements by occupation for the whole economy and for the digital and creative sector to 2020. Across all sectors, there is a net decrease in employment forecast between 2010 and 2020 for administrative and secretarial occupations, skilled trades occupations and process, plant and machine operatives, and this pattern is also true in the digital and creative sector.

Replacement demand in the digital and creative sector is greatest in the professional occupations at more than 200,000 jobs by 2020. The greatest replacement demand for the whole economy is also expected in professional occupations (around 2 million). The highest net change in demand is forecast for professional occupations, followed by associate professional and technical occupations, in the digital and creative sector as well as in the economy as a whole.

Figure 4.1 Replacement Demand for skills to 2020



Source: Wilson and Homenidou (2011)

Base: SSA Definition

4.5 Conclusion

The key drivers of change in the digital and creative sector have a variety of implications for skills demand. Increased technological developments will give rise to specific skill needs. For example security skills will be important as data protection is a key concern for the sector. New forms of technology including cloud computing and the continued convergence of IT and communications technologies mean security has to evolve to keep-up with threats. Other issues will stoke demand for high level technology specific skills, such as the move to a low carbon economy requiring skills in power management and thermal solutions which are likely to include significant technological elements. In the creative sub-sector technical skills will be needed to produce content across multiple-platforms.

Technology drivers in the digital sub-sector, and the business model challenge for the creative sector, will also mean that the sector will have high demands for managerial, professional and technical skills over the medium term.

Employment projections for the sector as a whole indicate that there will be growing need for high level skills. It is expected that there will be 300,000 more managers, professionals, and associate professional occupations between 2010 and 2020 as the sector grows. This represents an increase of over 23 per cent on the 2010 employment level in these occupations. When considering qualification levels, the projected growth in high skill levels is even greater - there will be a need for 350,000 more people qualified at first degree level or above by 2020, which, as a percentage increase, it exceeds for the economy on average. The increase in demand for workers with low levels of qualifications is also expected to be greater than the average for the economy as a whole as is the decline in demand for workers skilled to intermediate levels.

In addition to meeting this expansion demand as the sector grows, there will also be the need to meet replacement demands as individuals leave the sector. These replacement demands are projected to be even greater than the expansion demands for managerial, professional and associate professionals. As a result, there is a total requirement for these three occupational groups of just under 800,000 between 2010 and 2020 – 300,000 in the digital sub-sector, and just under 500,000 in the creative sub-sector.

The key question for the sector is will the supply of skills be sufficient to meet these growing and changing demands? In the next chapter we examine the sources of supply and in Chapter 6 look at any current or potential mismatches between supply and demand.

5 Skills Supply

The supply of skills comes from two sources: the investments that individuals make in their initial education and training before they enter the labour market and the investments that employers make in developing the skills of their workforce. Obviously there are links between the two and the State is also involved in funding initial education and training and supporting workforce development and individuals can invest in their own skills whilst in the labour market. In examining the supply of skills to the digital and creative sector in this chapter, we distinguish between individual and employer investment.

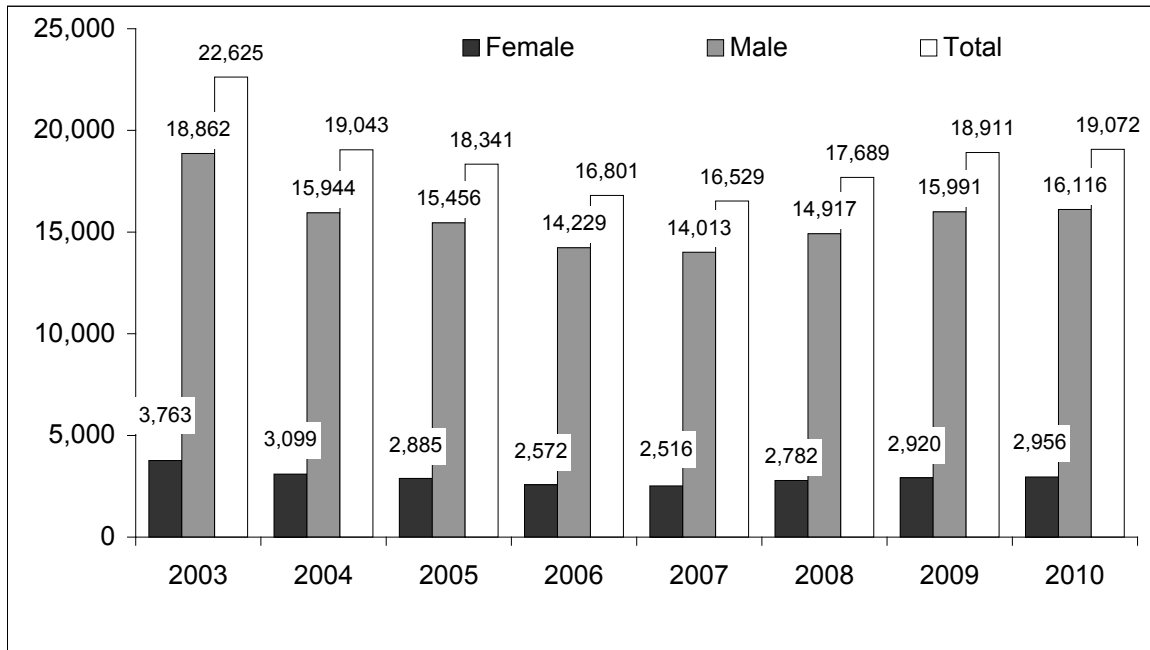
5.1 Trends in Skills Supply: Individuals

Higher education

HEIs are one of the main suppliers of professionals to the digital and creative sector. Overall, demand from individuals for higher education is up. The total number of individuals applying to study at UK Higher Education Institutions (HEIs) increased by 38 per cent over the period 2006-11. The number of applications they made increased by 29 per cent and the number of those applications which were converted in to accepted offers to study (acceptances) increased by 26 per cent (UCAS, 2011).

Despite this upward trend, there has been a decline in the number of students applying for computer degrees, although this has reversed slightly in the last few years. Figure 5.1 shows the trend since 2003 in the number of students accepting degree, foundation degree and HND courses in computer science and related disciplines, and shows numbers fell by over a quarter between 2003 and 2007, before rising by 15 per cent since then. The gender imbalance is clearly shown as women make up only 15 per cent of students starting computing and related HE courses.

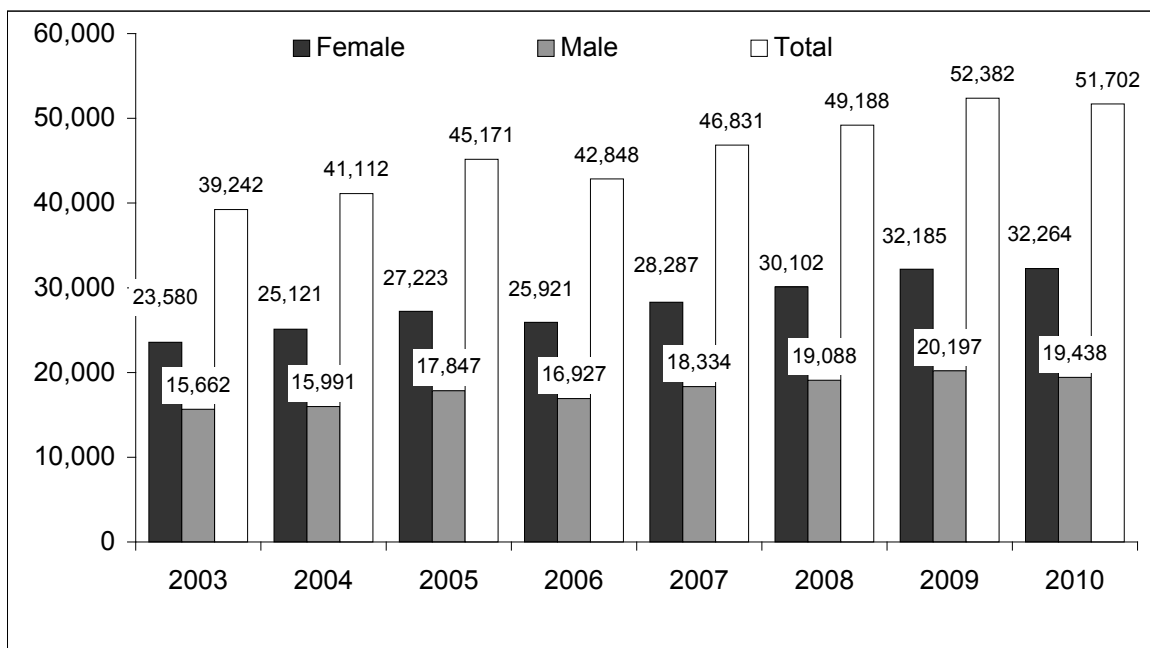
Figure 5.1: Computer science acceptances at UK HEIs, 2005/06 to 2009/10



Source: UCAS (2011) Annual Subject Datasets 2003-2010

There has been a very different trend among creative arts and design courses at HEIs, and Figure 5.2 shows that acceptances of places on degree, foundation degree and HND courses have increased by a third since 2003, albeit with a slight drop off between 2009 and 2010. The proportion of acceptances by female students for creative courses has also increased, from 60 per cent in 2003, to 62 per cent in 2010.

Figure 5.2 Creative arts and design acceptances at UK HEIs, 2005/06 to 2009/10



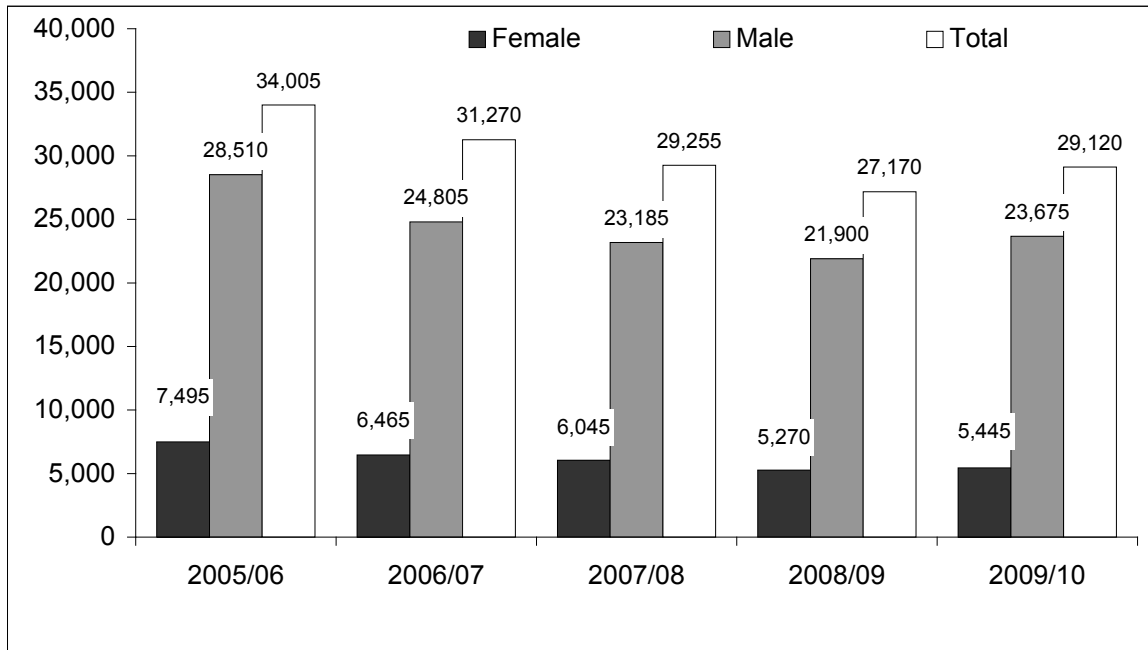
Source: UCAS (2011) Annual Subject Datasets 2003-2010

Turning now from inputs into the HE system to look at the number of digital and creative graduates and postgraduates it produces, Figure 5.3 shows the number of computer science qualifications (both postgraduate and under-graduate) attained between 2005/06 and 2009/10, and Figure 5.4 shows the number of creative arts and design qualifications attained.

Looking first at the digital sub-sector, the number of computer science qualifications has fallen 14 per cent in recent years following the trend in acceptances but against a backdrop of increasing numbers of total HE qualifications (12 per cent). There is also a large and growing gender imbalance as women make up only 19 per cent of those gaining computer science qualifications in 2009/10, down from 22 per cent in 2005/06. This is in stark contrast to the gender balance for graduates and post-graduates in the UK as a whole in 2009/10 when women represented a slight majority (56 per cent). However, the trend of declining proportions of female graduates and post-graduates in the sector is echoed in higher education as a whole as it has declined from 58 per cent in 2005/6.

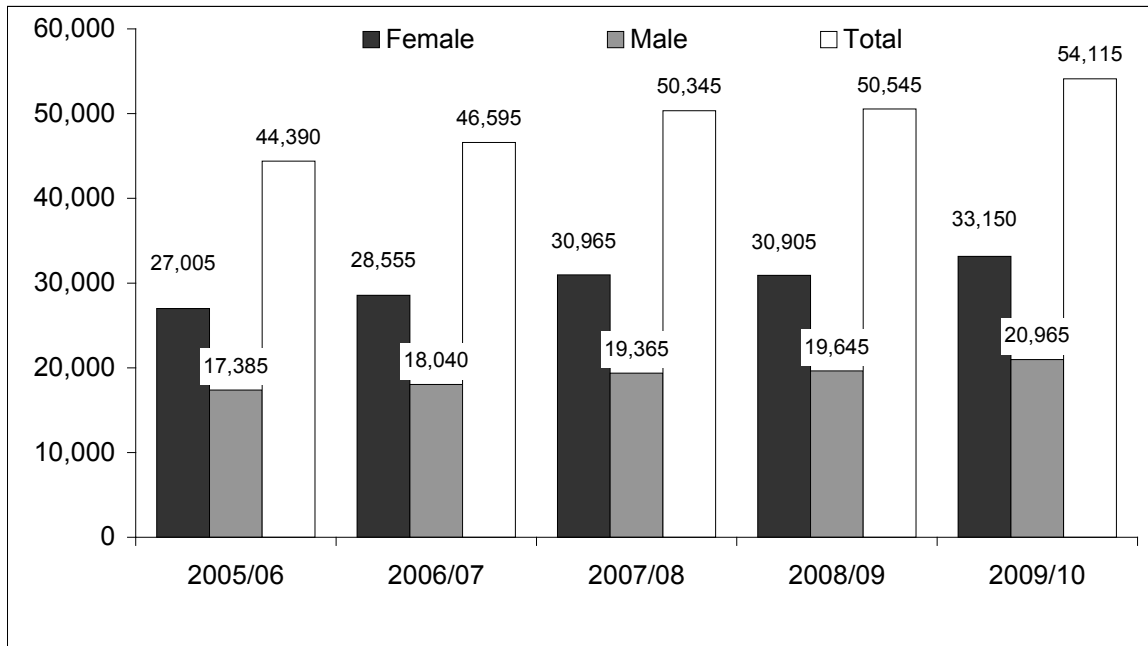
Turning to creative graduates and postgraduates, numbers have increased by 20 per cent in the last four years which exceeds the increase in all HE qualifications (12 per cent). Since 2005/6 women have consistently represented 60% of those gaining creative arts and design qualifications above that for HE as a whole and defying the overall trend.

Figure 5.3 HE computer science qualifications attained in UK HEIs, 2005/06 to 2009/10



Source: HESA (2011)

Figure 5.4 HE creative arts & design qualifications attained in UK HEIs, 2005/06 to 2009/10



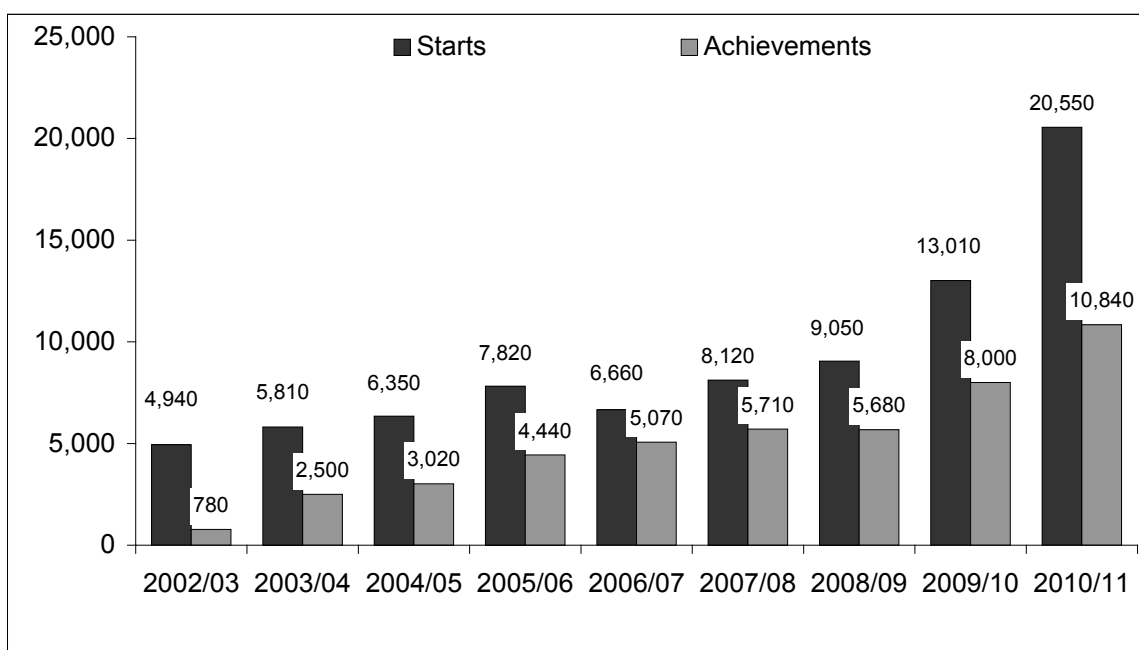
Source: HESA (2011)

There is some concern among employers that relevant degree courses do not adequately prepare graduates for a career in the creative sub-sector. In particular there are concerns that higher education institutions struggle to keep up to date with technological changes in the digital environment (e-skills 2009, UKCES, forthcoming b). In addition the quality of courses providing specialist training for the video games and visual effects industry has been particularly criticised (Nesta, 2011).

Apprenticeships

There is an increasing focus in the UK's vocational education and training system on apprenticeships, particularly as a source of supply of intermediate technical skills. The digital and creative sector has historically had little involvement with apprenticeships, although activity has increased dramatically in recent years, as Figure 5.5 shows. In 2010/11 there were 20,010 apprenticeship starts in the sector, more than double the figure just two years previously (9,050 in 2008/09). Apprenticeship achievements totalled 10,210 in 2010/11, an 80 per cent increase on the figure for 2008/09.

Figure 5.5 Digital and creative apprenticeship starts and achievements (all levels), 2002/03 to 2010/11



Source: Data Service (2012)

Table 5.1 shows starts in across all Apprenticeship levels in the digital and creative sector by age between 2002/03 and 2010/11. Most of the growth in apprenticeship starts in the sector over the last two years has been among advanced apprenticeships, whose numbers have nearly trebled since 2008/09. This is consistent with growth across all sectors, as apprenticeship starts among advanced apprenticeships nearly doubled.

Another key trend in the last year has been a significant rise in the number of older apprentices aged 25 and over, with the number increasing by nearly 200 per cent from 1,710 in 2009/10 to 5,260 in 2010/11. During the same period across all sectors, the number of older apprentices aged 25 and over has increased by 270 per cent from 49,100 in 2009/10 to 182,100 in 2010/11.

Table 5.1 Digital and creative apprenticeships starts by level and age between 2002/03 and 2010/11

Intermediate Apprenticeships (level 2)									
	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
<19	2,490	2,920	2,860	2,690	2,630	2,610	2,760	3,160	3,600
19-24	720	1,030	1,670	1,730	1,720	1,680	1,180	1,620	1,880
25+	0	0	0	0	10	950	1,140	1,110	3,430
Total	3,210	3,950	4,540	4,400	4,360	5,230	5,080	5,900	8,910
Advanced Apprenticeships (level 3)									
	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
<19	730	730	660	1,080	1,070	1,380	1,980	4,020	6,730
19-24	980	1,120	1,150	2,280	1,210	1,190	1,440	2,370	3,030
25+	0	0	0	60	0	260	500	580	1,830
Total	1,740	1,860	1,810	3,410	2,270	2,830	3,920	6,970	11,590
Higher Apprenticeships (level 4 +)									
	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
<19	0	0	0	0	10	30	20	20	10
19-24	0	0	0	0	10	30	40	110	40
25+	0	0	0	0	0	0	0	20	10
Total	0	0	0	0	20	50	60	140	60
All Apprenticeships									
	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
<19	3,250	3,650	3,520	3,760	3,720	4,010	4,750	7,200	10,340
19-24	1,700	2,160	2,820	4,000	2,930	2,900	2,660	4,110	4,950
25+	0	0	0	60	10	1,210	1,640	1,710	5,260
Total	4,940	5,810	6,350	7,820	6,660	8,120	9,050	13,010	20,550

Source: Data Service (2012)

The Welsh Millennium Centre Case study illustrates how one creative sector employer has become involved with apprenticeships to open up vocational training routes into careers within the sector (see panel).

Case study: Wales Millennium Centre

The Challenge

A leading employer in Wales, the Wales Millennium Centre, wanted to ensure a good supply of skilled employees and decided to invest in its workforce by offering training opportunities to both new and existing personnel looking to break into backstage, community arts and venue operation careers.

The Approach

Creative Apprenticeships have been developed by Creative & Cultural Skills, the Sector Skills Council for the creative and cultural industries, and have been developed in close partnership with industry and education providers. They were launched with employers and FE Colleges in Wales in July 2010, to provide clear and accessible routes into real, sustainable, creative and cultural jobs through the use of vocational, rather than academic, qualifications. Wales Millennium Centre decided these apprenticeships would meet its needs and to date, they have five apprentices across multiple disciplines.

Diane Prentice, Deputy Technical Manager, knows from personal experience how important it is to diversify routes into a sector she loves: *“I know that it’s a practical job, and that you need hands on experience to be able to do it. So I think that Creative Apprenticeships are brilliant, where people can come in and they have the opportunity to do the job.”*

Part of Diane’s role, alongside the rest of her team at the Centre, is to oversee the work of her new team of Apprentices, imparting technical knowledge gained from years of experience and teaching tricks of the trade which can only be learned on the job, rather than in a classroom. The Apprentices are given all the training and support they need in order to complete work-relevant tasks, but are also expected to think for themselves, something that is a prerequisite upon entering the workplace.

The Benefits

Diane is nothing but positive about taking on the Creative Apprentices: *“It’s been a great experience so far. The Apprentices have thrown themselves into the work and integrated themselves into the team very well. They bring freshness to the work environment; their enthusiasm is infectious. For me, personally, teaching someone else keeps your mind fresh.”*

This approach to learning suits both parties – the employer has a young, motivated and enthusiastic member of the team who is well-trained in the business, whilst the Apprentice leaves his or her period of education debt-free, well-skilled and confident to enter work.

“It’s quite a hard industry to get into, because it’s often the case that you have to know someone. The Apprenticeship has given me the chance to work on rigging, electrics, bringing the scenery in and out and working on the fly-deck – and it’s only been a few weeks into the apprenticeship. I don’t think I’d have had access to working across as many backstage disciplines if I’d have gone down the college-only route.” Karly Hill, Technical Apprentice

Source: <http://www.ccskills.org.uk/Apprenticeships/CaseStudies/tabid/896/Default.aspx>

5.2 Employer Investment in Skills

Table 5.2 indicates the number of employees in receipt of work-related training over the past 13 weeks. The proportion of the digital and creative workforce in receipt of such training (18.3 per cent) is lower than the proportion across the whole economy (25.5 per cent). This training shortfall is evident among both men and women, and among young workers. The percentage of workers aged 25 years and under who have received such training is lower in the digital and creative sector (25.1 per cent) than across all sectors (29.5 per cent).

The digital and creative sector trains a greater proportion of its sales and customer service workers than is the case across the whole economy, although the occupation is relatively small in the sector as it represents only five per cent of the workforce compared to nearly half that for the whole economy. In contrast, higher level occupations which at 68% of all workers are overrepresented in the sector compared to all sectors (42%) are much less likely than average to receive training. This is especially so for associate professional and technical occupations. Consequently, the sector's dominant occupations which happen to be those associated with higher skills needs are less likely to receive training.

Table 5.2 Number of employees in receipt of work-related training over the past 13 weeks

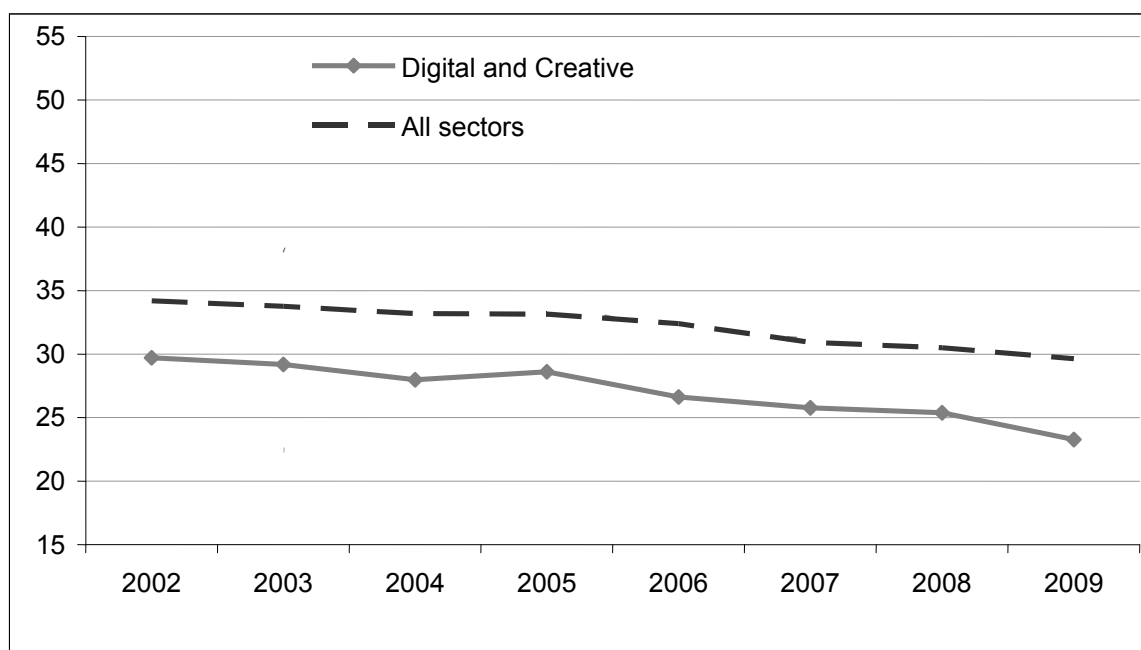
Occupation (SOC Major Groups)	Digital and Creative		Whole economy	
	Number	% of workforce	Number	% of workforce
All	320,000	18.3	7,353,000	25.5
Managers, directors and senior officials	74,000	18.5	1,008,000	22.6
Professional occupations	83,000	23.0	1,588,000	39.5
Associate professional and technical	89,000	16.1	1,505,000	35.3
Administrative and secretarial	25,000	16.4	670,000	21.1
Skilled trades occupations	20,000	15.5	477,000	15.6
Caring, leisure and other service	*	*	928,000	36.5
Sales and customer service	17,000	25.8	417,000	19.4
Process, plant and machine operatives	*	*	289,000	15.2
Elementary occupations	9,000	16.1	470,000	14.5
Women	113,000	18.8	3,868,000	28.9
Men	207,000	18.1	3,484,000	22.6
People aged under 25	37,000	25.1	1,092,000	29.5

Note: * indicates data are not statistically reliable and have been suppressed

Source: Labour Force Survey 2010 (four quarters)

Not only is the incidence of work-related training lower in the digital and creative sector than in the workforce as a whole, the incidence has been falling in recent years at a faster rate than across all sectors. Figure 5.6 shows the recent trend in the proportion of employees who had received work-related training over the past 13 weeks, and shows that the proportion of employees in receipt of training in the digital and creative sector fell from 30 per cent in 2002 to 24 per cent 2009, while the proportion of employees in receipt of training across all sectors fell from 34 per cent to 30 per cent over this period.

Figure 5.6 Percentage of employees in receipt of work-related training over the past 13 weeks



Source: Labour Force Survey 2010 (four quarters)

In the UK Commission's UK Employers Skills Survey 2011 (Davies et al., 2012), 53 per cent of employers in the digital and creative sector reported that they were providing training to their employees while 59 per cent of employers across all sectors provided training (see Table 5.3). The average number of days of training per trainee was 7.8 days in the digital and creative sector, slightly less than the 8.9 days, across all sectors. However, an above average proportion of digital and creative employers reported that they would like to provide more training, at 54 per cent compared to the average across the whole economy of 46 per cent, although digital and creative employers generally expressed high barriers to training, such as expense or time away from work.

The sector's involvement with apprenticeships has been relatively low, at around half the level in the economy as a whole, although the proportion of employers who plan to offer apprenticeships in the future was much higher in the digital and creative sector than it was across all sectors (23 per cent compared with eight per cent). This intention may be reflected in the recent increase in the number of apprenticeships starts in the sector (Figure 5.5). Digital employers generally had higher levels of involvement with apprenticeships than did creative employers. The recruitment of young people straight from school is also relatively low, although the proportion of employers who have recruited young employees straight from college or higher education is the same as the average across all sectors.

Table 5.3 Employer Investments in Skill Development

	Digital and Creative	Whole economy
% of employers training ¹	53	59
% of employees receiving training ¹	42	46
% average number of training days (per trainee) ¹	7.8	8.9
% of employers who have any staff undertaking Apprenticeships at their site ²	3	5
% of employers who currently offer Apprenticeships at their site ²	7	4
% of employers who plan to offer Apprenticeships in the future ²	23	8
% of employers who have recruited someone 16-18 from school ¹	4.2	9.7
% of employers who have recruited someone 17-24 from college/FE/university/HE ¹	12.3	12.2

Source(s): ¹Davies et al., (2012); ²Shury et al.,(2011)

Definition: see table 2.1

Base (1) All establishments 87,572 unweighted; all establishments providing training 66,916 unweighted

Base (2): All establishments 14,390 unweighted

Employers in the digital and creative sector are also less likely than average to work with further education or higher education providers to meet their training needs. According to Shury et al., (2011), 16 per cent of digital and creative employers had used a further education college (compared with 23 per cent of all employers) and 10 per cent had worked with a HE institution (compared with 13 per cent overall). However digital and creative employers were just as likely as any other to use a private training provider (54 per cent had done so in the last year, the same as the national average).

Where digital and creative employers do invest in skills it is much less likely to lead to a nationally recognised qualification than training arranged by employers in other sectors. The UK Commission's UK Employer Skills Survey 2011 (Davies et al., 2012) found that only 26 per cent of digital and creative respondents said that staff had been trained towards a nationally recognised qualification in past 12 months, compared to 43 per cent of all firms across all sectors.

Table 5.4 shows the types of training that were provided by digital and creative employers. They were more likely than other employers to have provided training in new technology, but less likely to have provided management training and supervisory training.

Table 5.4 Types of training funded or arranged for employees (%)

	Digital technology	Creative media and entertainment	All sectors
Job specific training	82	86	84
Health and safety/first aid training	47	52	71
Induction training	37	36	52
Training in new technology	76	63	47
Management training	23	25	34
Supervisory training	18	19	32
Personal Development Training	4	2	3
Other	*	*	*
None of these	1	1	1
Don't know	*	*	*

Source: Davies et al., (2012).

Definition: see table 2.1

Base: All establishments providing training 66,916 unweighted.

Table 5.5 presents some further indicators of training activity. While digital and creative employers are just as likely as other employers to have a business plan, they are much less likely than other employers to have a training plan or a training budget, less likely to engage in annual reviews of their employees, less likely to engage in training, particularly that which leads to a recognised qualification, and less likely to assess the training in which their employees have participated. Employer provided training is clearly less formalised in the sector. This may be a consequence of the sector's character and modus operandi but it gives rise to questions of whether this presents the most effective and wise investment given the challenges facing the sector.

The data also shows that proportion of employees in the digital and creative sector training towards a qualification is about half the level across the whole economy.

Table 5.5 Further Indicators of Training Activity

	UK	Digital technology	Creative media and entertainment
% all establishments with business plan	61	63	62
% all establishments with training plan	38	23	23
% all establishments with training budget	29	24	22
Annual review of staff (all establishments)			
All staff reviewed	47	39	39
No staff reviewed	43	52	50
Provide training (all establishments)	59	54	52
Train towards qualification (all employers providing training)	43	27	25
Training to Level 2 qualification	14	5	4
Training to Level 3 qualification	16	5	6
Training to Level 4 qualification	12	12	9
Assess training delivered	65	51	55
% of employees trained towards a qualification in last 12 months	12	7	5

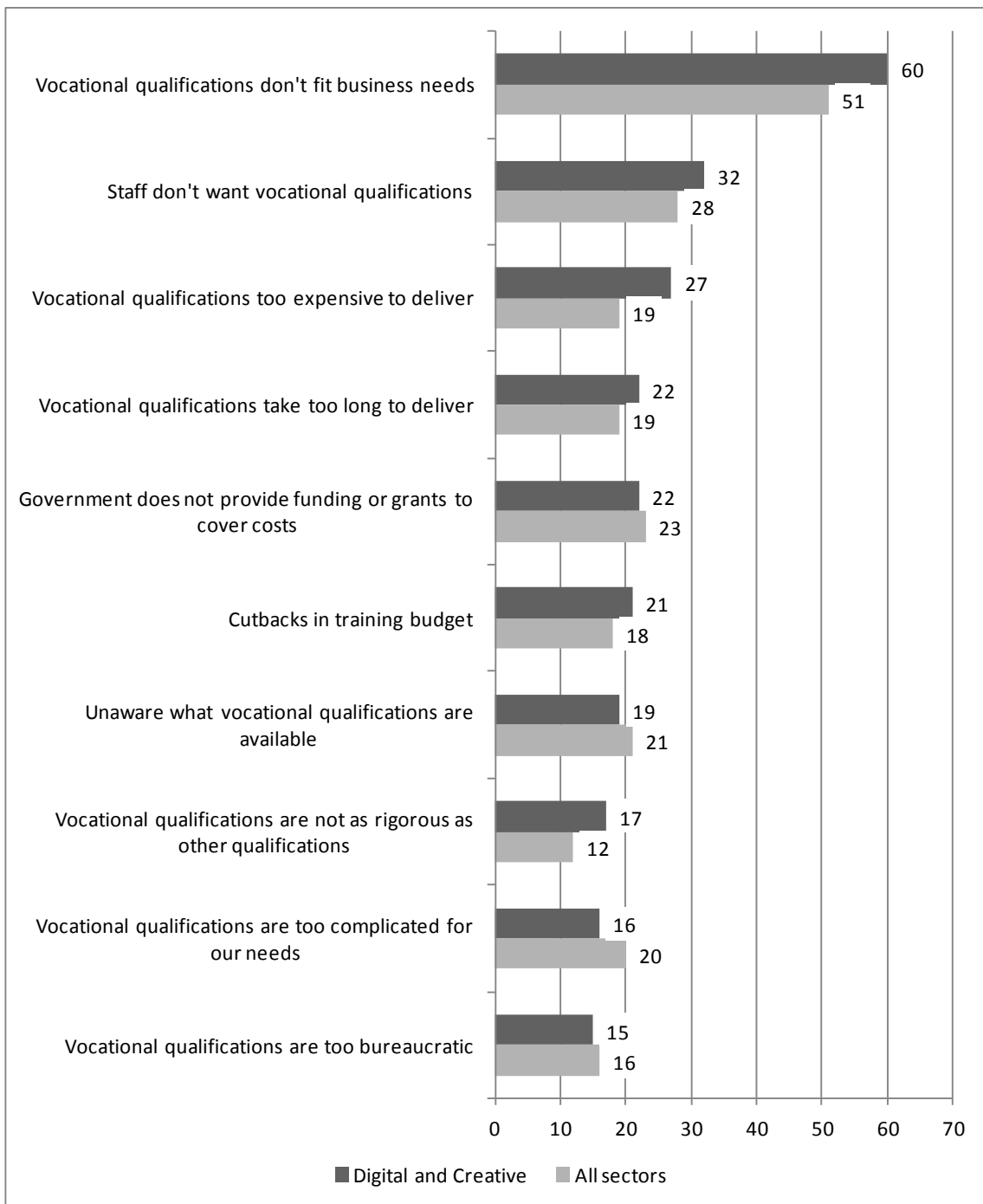
Source: Davies et al., (2012)

Definition: see table 2.1

Base: All establishments 87,572 unweighted; all establishments providing training 66,916 unweighted.

Why do digital and creative employers not provide vocational qualifications? The main reasons are to do with their apparent lack of enthusiasm for vocational qualifications themselves. For example, in the Employers Perspective Survey, 2010, (see Figure 5.7) the employers who did train in the digital and creative sector were more likely than employers in other sectors to say that vocational qualifications did not fit business needs (60 per cent in the digital and creative sector compared with 51 per cent of all employers), staff did not want vocational qualifications (32 per cent with 23 per cent) or that vocational qualifications were expensive to deliver (27 per cent compared with 19 per cent) or took too long to deliver (22 per cent compared with 19 per cent).

Figure 5.7 Reasons for not providing vocational qualifications



Source: Shury et al., (2011)

Base: All establishments 14,390 unweighted.

Employer use of external training providers

Despite the findings above that a low proportion of the sector workforce were trained towards a qualification, Shury et al., (2010) suggest that digital and creative employers are slightly less likely to engage with external training providers than employers in general: 27 per cent of digital and creative establishments had no contact with external providers compared with 29 per cent of all employers. They are just as likely to use private training providers as are establishments in other sectors (54 per cent), but are less likely to use FE colleges (16 per cent compared with 23 per cent of all establishments), universities and HE institutions (10 per cent compared with 13 per cent of all establishments) and third sector/not-for-profit providers (17 per cent compared with 19 per cent of all establishments).

The statistics above give an overview of the level of training and skills development activity undertaken by employers, but insights can also be obtained from looking at specific examples of employers training activities and the value they place in what they provide.

Digital and creative employers were slightly less likely than all employers to not train because they thought their staff were fully proficient (61 per cent compared with 64 per cent), but more likely to say that they had no funds available (17 per cent compared with 10 per cent) (Davies et al., 2012) in keeping with the relatively few employers with training budgets shown in Table 5.5.

All these data are consistent with a relative lack of formality in the way people are managed and developed across the sector, which may be a function of the relatively small size of many workplaces identified in section 2. This conclusion is further reinforced by the fact that relatively few establishments in the digital and creative sector are accredited to Investors in People compared to the UK average. Table 5.6 shows that between seven and ten per cent of digital and creative employers have met the liP standard compared with 16 per cent of employers across the economy.

Table 5.6 Investors in People accreditation

	Digital	Creative	UK
IIP accredited (%)	7	10	16
Not IIP accredited (%)	84	78	69
Don't know (%)	8	11	15
Weighted base	72,281	143,772	2,299,921
Unweighted base	2,510	3,762	87,572

Source: Davies et al., (2012)

Note: Based on SSA definition of sub-sectors

Base (ESS): All establishments 87,572 unweighted

Although relatively few digital and creative employers adopt formal business processes in managing the development of their employees, they are more likely than other employers to adopt high performance working practices linked to employee autonomy and flexible working (UKCES, forthcoming a and b).

The value of a more formal approach to training is seen in the Metro case study. This sets out the activities undertaken by a medium-sized employer engaged in publishing which had the effect of formalising the way it invested in training to improve quality and revenue growth (see panel).

Case study: Metro

The Challenge

Metro was launched in March 1999 as a free, colour, weekday newspaper for London's commuters. As a relatively new venture, it focused on its processes, rather than its people, and this lack of people focus meant that Metro had enormous difficulties in holding on to its employees. Consequently high staff turnover rates and high recruitment costs became the order of the day. Only a few years after its launch, employee attrition was running at 33 per cent in 2001 and each sales person that left was costing Metro an estimated £91,000 in recruitment and training costs and lost sales. Editorial staff were also dissatisfied with the opportunities for their own development on the paper.

A new senior management team decided that a change in direction was needed urgently to address the personnel problems faced by the paper.

The Approach

A new Director of Talent and Culture was appointed to begin the process of change. They devised a Talent Strategy to build a structure that would encourage excellence and loyalty among the staff, and ultimately help to achieve Investors in People Standard. Initial concerns that the creative nature of Metro would not fit within the principles of the Standard were set at rest by IIP Assessors.

The initial IIP assessment revealed that development was a key weakness, and consequently Metro's senior editorial team undertook a seven week 'bite size' training

programme on how to avoid micro-management, to empower and also to develop their staff. There are a range of ongoing development initiatives, and Metro conducts regular measurement to assess progress and staff satisfaction.

The Benefits

There have been significant results:

- Employee attrition reduced by 50 per cent to just 9 per cent
- Savings of £1 million each year against recruitment costs, retained knowledge and potential lost business
- 20 per cent year-on-year revenue growth in the face of a declining market
- 91 per cent of employees say they are proud to work for Metro.

“We invest heavily in our talent, because we know that excellent people will create excellent products. There is no substitute for developing people. It is in everyone’s interest and provides a real future for our people and our business. Get this right and you will achieve a positive impact on your bottom line” (Steve Auckland, Managing Director)

Source:

<http://www.investorsinpeople.co.uk/MediaResearch/CaseStudy/Pages/CaseStudyDetails.aspx?CSID=50>

5.3 Migrant labour supply

Up until now, this chapter has just looked at domestic supply of skills. One other source of supply is to bring in skill from abroad in the form of migrant labour.

Evidence published by the Migration Advisory Council suggests that parts of the sector rely fairly heavily on immigrant labour (MAC 2010). MAC’s analysis of Labour Force Survey data on the share of workers who were born overseas shows that in 2008 19 per cent of workers in the computer and related activity sector were non-UK born, compared to the average figure of 13 per cent. This sector had the 6th highest share of non-UK born workers, and the share of non-UK born workers had increased from 10 per cent in 1994. Looking at occupations, there was a similarly high proportion of information and communication technology professionals who were born overseas, at 20 per cent in 2008. This was the occupational group with the 7th highest share of non-UK born workers. The proportion of non-UK born artistic and literary associate professionals was also high, at 18 per cent.

The recent review of recommended shortage occupation lists (MAC, 2011) contained a range of job titles in the areas of visual effects and 2D/3D computer animation for film, television and the video games sectors. These are open to suitably qualified people from anywhere in the world and exempt from the immigration restrictions which would otherwise apply. While there has been some ‘brain drain’ to North America due to high wages and more stable/better financed companies, the UK has benefited from immigration, particularly from Eastern Europe (Skillset and CCS, 2011).

The reliance on migrant workers in parts of the digital and creative suggests that the UK has not been generating sufficient supply to meet employers’ needs in those areas. This point was reinforced by a recent report by Nesta (2011) on the visual effects industry.

“...the visual effects industry, though still enjoying very rapid growth, is having to source talent from overseas because of skills shortages at home. That is mainly a failing of our education system – from schools to universities – and it needs to be tackled urgently if we are to remain globally competitive.”

5.4 Conclusion

The evidence suggests a rather mixed picture regarding skills supply across the sector.

Looking first at initial supply, the number of individuals accepting places to study computing and IT courses are low and have been declining, although there are early signs the decline may have halted. The *quantity* of graduates may, therefore, not be sufficient to meet the growing demand for professional and technical skills outlined in Chapter 4. The shortfall is sometimes made up by recruiting high level skills from abroad. On the other hand the number of creative graduates is rising, but there are concerns about the *quality* of their education and whether they finish their studies with right sort of skills that employers want.

However there is not much evidence to suggest that employers themselves are investing heavily in the development of people once they become employed. Relatively few employers are arranging formal training for their staff in the sector compared to the economy as a whole, particularly training that leads to national recognised qualifications, and the proportion of the workforce receiving training is also below average and falling. In earlier chapters we saw that a large proportion of the workforce were in high level occupations although the proportion of digital and creative employees in managerial, professional or associate professional jobs in receipt of work-related training was well below average. Management training is less likely to be funded than in other sectors. Parts of the sector also employ a lot of young people (though relatively few 16 to 18 year olds) but they are less likely than average to receive training too. Questions can therefore be asked as to whether this represents sufficient investment given the challenges the sector faces.

Digital and creative sector employers tend to be less involved with government skill development initiatives and with the education system, than other employers. However, they are more likely than most to say that, for example, the available vocational qualifications don't match the need of their business and express dissatisfaction with the quality of graduates. A greater level of engagement with training and education providers may be one way in generating a more responsive system.

Generally digital and creative employers tend to adopt a less formal approach to the development of their employees, however, the case studies, show that adopting a more systematic approach can reap significant benefits.

On the positive side, the number of people starting apprenticeships has been increasing since the mid 2000s with more substantial rises in recent years and as a result the sector may start to create more opportunities for younger people (ie aged 16 to 18). Apprenticeship achievements have been rising over a longer period and are likely to be boosted further by the recent rise in starts and the proportion of sector employers who plan to offer apprenticeships in the future is substantially above the proportion across all sectors.

The heavy reliance on migrant workers in parts of the sector and for some roles suggests employers are not able to obtain the skills they require from the supply of domestic labour.

The next section will more closely examine the evidence about whether supply is able to meet demand.

6 Skill Mismatches

6.1 Defining Skill Mismatches

Previous evidence has demonstrated that mismatches between the demand for, and supply of skills, can impede organisational performance (Garrett et al., 2010). To some extent, skill mismatches will result from ongoing processes of technical and organisational changes within firms, and shifts in the pattern of demand in external markets. To some degree these will be transitional mismatches as the demand side begins to fully articulate its skill requirements and the supply side responds accordingly. But there are also likely to be structural mismatches where the demand for, and supply of, skills remain out of kilter despite the market signalling what skills are required.

As there is no direct measure of mismatches between the demand for, and supply of, skills, at the sectoral level inferences about the balance between the two are typically made through various means given that each measure provides only partial information. Employers report skill mismatches in the form of hard-to-fill vacancies (HtFVs) and those that are hard to fill as a result of a lack of skills, experience or relevant qualifications (skill-shortages, SSVs). This provides an indication of the difficulties employers have in recruiting people from the external labour market with the skills and attributes they require. Surveys also capture information about problems employers experience with the skills of existing staff with respect to the extent they lack full proficiency in their jobs (i.e. skill gaps). Skill deficiencies can also be inferred from other data, such as earnings for example, as employers respond to a skill shortage by offering higher wages.

6.2 Evidence of employer reported skill deficiencies

The UK Employer Skills Survey (Davies et al., 2012) provides an opportunity to gauge the current state of recruitment problems and skills deficiencies at a time of lower demand than has been the case over much of the previous two decades.

The evidence suggests that in spite of the recession, labour demand is higher in the digital and creative sector than across the economy as a whole, with 40 vacancies per 1,000 employees, compared to the average across all sectors of 23 vacancies per 1,000 employees (Table 6.1). Furthermore, not only does the digital and creative sector have a high proportion of vacancies in relation to employment, it also has above average proportions of hard-to-fill vacancies, and vacancies that are hard-to-fill due to a shortage of applicants with the required experience, skills or qualifications. Thus the survey evidence points to skill shortages adversely affecting the sector.

In relation to skills gaps (the extent to which employers regard their workforce as being fully proficient at their existing job) the level of skills gaps in the digital and creative sector is lower than in the economy more generally, with 45 skills gaps per 1,000 employees compared to the average across all sectors of 54, and only seven per cent of employers reporting skills gaps compared to 13 per cent of all employers.

Table 6.1 Skill Deficiencies

	UK	Digital and creative sector
Vacancies		
per 1,000 employees	23.1	39.5
as a % of employees	2%	4%
% of establishments with at least one vacancy	12%	12%
Total Vacancies	635,900	67,250
Hard to fill vacancies (HtFVs)		
per 1,000 employees	5.2	7.2
as a % of vacancies	23%	18%
% of establishments with at least one HTFV	4%	4%
Total HtFVs	143,550	12,250
Skill Shortage Vacancies		
per 1,000 employees	3.8	6.1
as % of all vacancies	16%	16%
% of establishment with at least one SSV	3%	4%
Total SSVs	103,450	10,450
Skill Gaps		
per 1,000 employees	54.1	44.6
as % of employees	5%	4%
% of establishments reporting a skill gap	13%	7%
Total number of staff with skills gaps	1,489,500	75,850

Source: Davies et al., (2012)

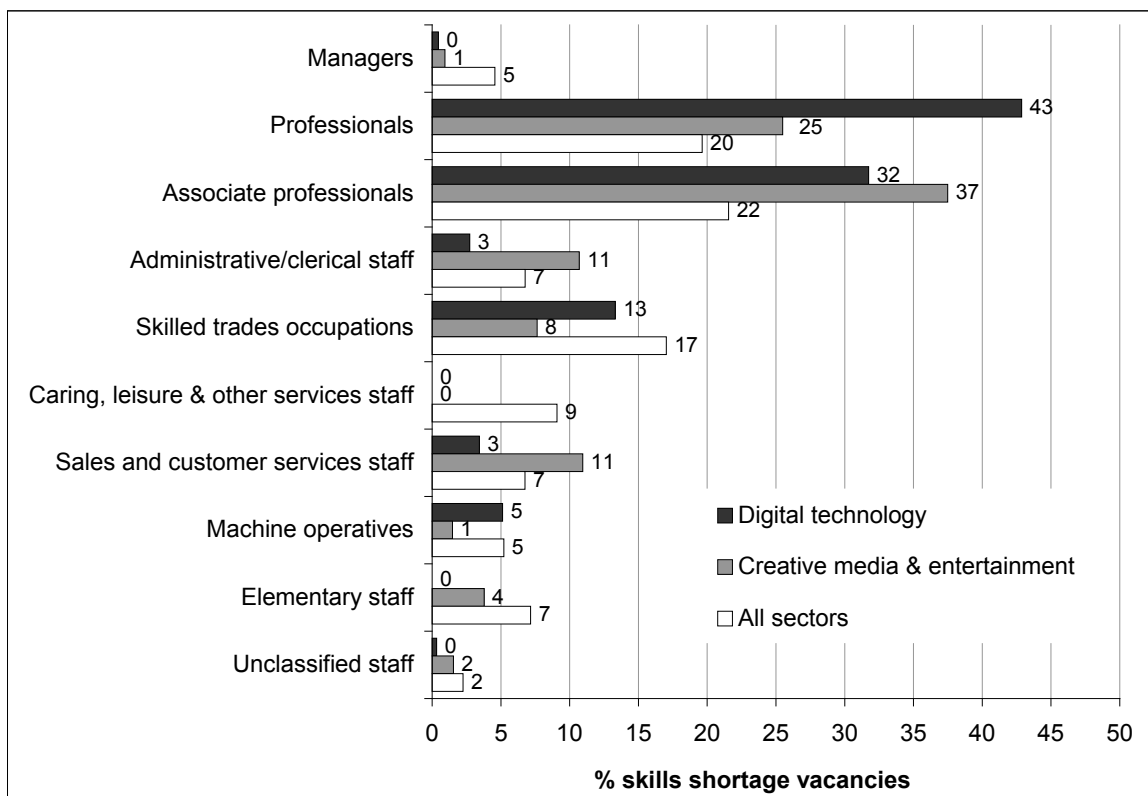
Definition: see table 2.1

Base: Vacancies as a % of employees based on all employment (N=87,571 establishments unweighted). Hard-to-fill vacancies as a % of vacancies based on all vacancies (N=17,166 establishments unweighted) SSVs as a % of vacancies based on all vacancies (N=17,166 establishments unweighted) Skills gaps as a % of employees based on all employment (N=87,571 establishments unweighted)

Notes: Numbers rounded to nearest 50

Overall, where employers in the sector report skills shortages they are much more likely to be in professional occupations, and associate professional and technical occupations, compared with the economy as a whole (see Figure 6.1). These are critically important occupations, comprising the largest occupational shares of employment. Professional skills shortages are particularly acute in the digital sub-sector, accounting for four out of ten skills shortages, while over a third of skills shortages in the creative sub-sector are among associate professional and technical skills occupations. It is these high skill roles that are expected to expand substantially to 2020 thereby potentially exacerbating current skills shortages in the digital and creative sector. Furthermore, these occupations are currently less likely to receive training compared to the average for the same roles in the economy as a whole.

Figure 6.1 Occupational Distribution of Skill Shortages in Digital and Creative

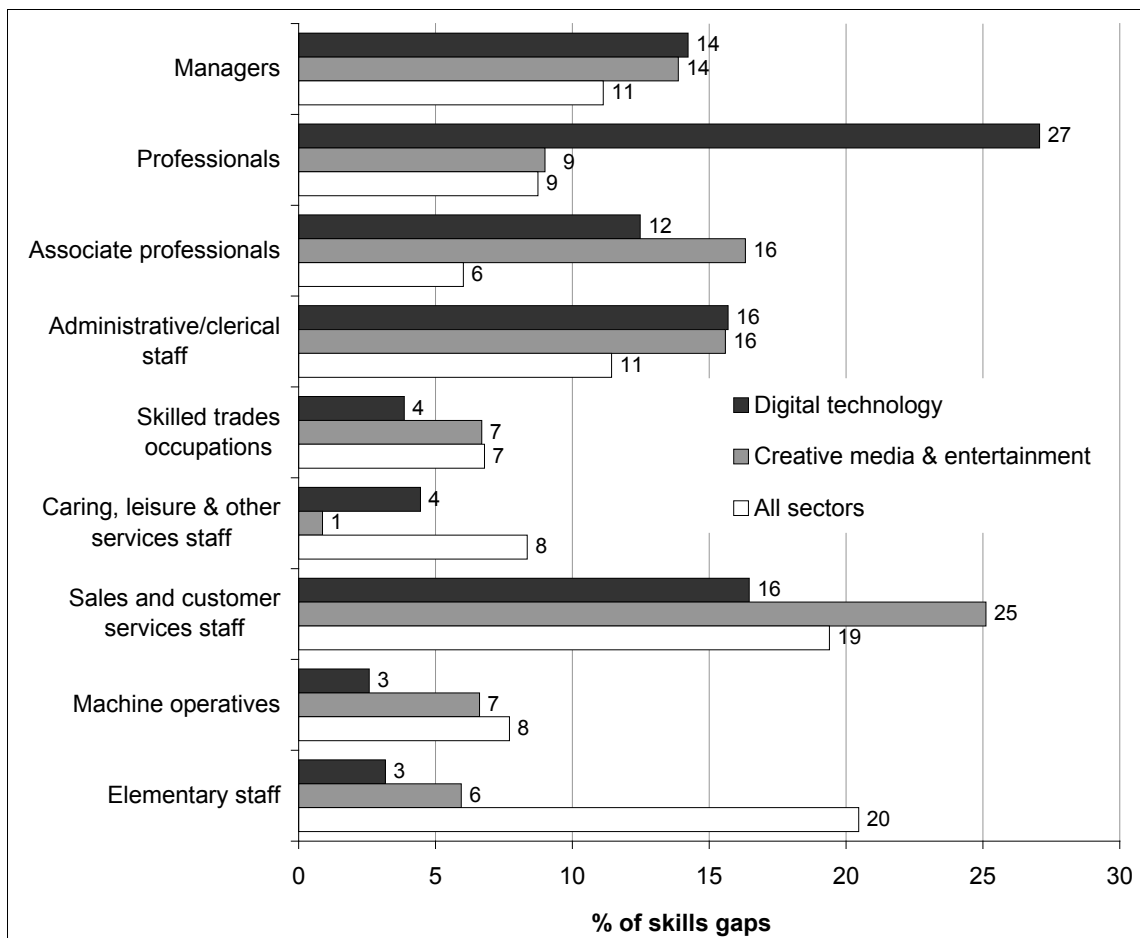


Source: Davies et al., (2012)

Base: All skill shortage vacancies (unprompted) 5498 unweighted

Turning to skills gaps, they are most common among professional occupations in the digital sub-sector, and among sales and customer service occupations in the creative sub-sector, although across both sub-sectors they are more common in managerial, associate professional and technical, and administrative and secretarial occupations than they are in the economy as a whole (Figure 6.2). This is broadly in line with other evidence that indicates that it is amongst higher level occupations that employees are least likely to be fully proficient (UKCES, 2010).

Figure 6.2 Occupational Distribution of Skill Gaps in Digital and Creative



Source: Davies et al., (2012)

Base: All skills gaps 166,795 unweighted

Further mismatches can be caused when the skills held by workers are not used to their full extent. The picture regarding the under-use of skills is a mixed one in the digital and creative sector. On the one hand, the sector is slightly less likely than the economy as a whole to have under-employed staff as 47 per cent of digital and creative employers said they had some under-employed, compared to 49 per cent of employers across all sectors. However, a higher than average proportion of digital and creative employers reported that all staff were under-employed, 27 per cent, compared to 19 per cent across all sectors. (Davies et al., 2012).

6.3 Causes, Impacts and Remedies

The UK Commission's UK Employer Skills Survey 2011 (Davies et al, 2012) provides a wealth of information about the causes and implications of skill shortages and skill gaps. In general, the main cause of skill shortages was a low number of applicants with the required skills, reported by 65 per cent of digital employers and 51 per cent of creative employers, compared to 40 per cent of employers across all sectors. A lack of work experience the company demands was also commonly cited, particularly in the digital sub-sector (36 per cent, compared to 24 per cent in the creative sub-sector compared to 21 per cent in the economy as a whole). In the creative sub-sector a low number of applicants with the required attitude, motivation or personality (26 per cent, compared to 18 per cent of all employers), and a lack of qualifications the company demands (18 per cent, compared to 11 per cent of all employers) were commonly cited causes.

There were a range of skills that employers found difficult to obtain from applicants, and these differed between the two sub-sectors, as Table 6.3 shows.

Job specific skills were those most commonly found difficult to obtain, with 80 per cent of digital employers and 56 per cent of creative employers reporting difficulties obtaining these skills (67 per cent across all sectors). Technical and practical skills were reported to be difficult to obtain by 44 per cent of digital employers and 46 per cent of creative employers, slightly below the proportion across all sectors of 48 per cent.

Just over half of digital employers found it difficult to obtain advanced IT or software skills (23 per cent across all sectors). Planning and organisation skills and problem solving skills were mentioned by digital employers by over 40 per cent of digital employers, slightly above the proportions across all employers, and the proportion of digital employers who reported difficulties obtaining written communication skills was also slightly above the average, at 37 per cent of digital employers compared to 35 per cent of all employers.

There were a range of skills that were more commonly cited as being in short supply by creative employers than they were by employers across all sectors, including problem solving skills (43 per cent, compared to 40 per cent across all sectors) written communication skills (41 per cent, compared to 35 per cent), literacy skills (40 per cent, compared to 29 per cent), advanced IT/software skills (39 per cent, compared to 23 per cent), numeracy skills (35 per cent, compared to 28 per cent), strategic management skills (33 per cent compared to 31 per cent) and foreign language skills (20 per cent, compared to 16 per cent).

Table 6.3 Skills found difficult to obtain

	Digital	Creative	Whole economy
	%	%	%
Job specific skills	80	56	67
Advanced IT or software skills	52	39	23
Technical or practical skills	44	46	48
Planning and Organisation skills	44	38	43
Problem solving skills	42	43	40
Customer handling skills	39	34	43
Written communication skills	37	41	35
Oral communication skills	34	28	40
Strategic Management skills	19	33	31
Literacy skills	18	40	29
Numeracy skills	17	35	28
Team working skills	15	18	34
Office admin skills	13	9	20
Foreign language skills	12	20	16
Basic computer literacy / using IT	8	8	17
Experience/lack of product knowledge*	2	1	2
Personal attributes (e.g. motivation, work ethos, common sense, initiative, reliability, commitment, punctuality, flexibility)*	1	6	3
Written Welsh language skills	*	*	1
Oral Welsh language skills	*	*	1
Other	*	1	1
No particular skills difficulties	4	3	4
Don't know	1	3	3
Weighted base	3,386	4,746	67,965
Unweighted base	204	221	3,973

Source: Davies et al., (2012)

Base: All employers with prompted or unprompted skill shortage vacancies, 3973 unweighted

The main implications of skill shortages for the operation of the organisation was to increase the workload of others, mentioned by 89 per cent of both digital and creative employers compared with 83 per cent of all employers. Delays developing new products or services, were mentioned by 68 per cent of digital employers and 51 per cent of creative employers compared with 41 per cent of employers across all sectors. Skills shortages also caused significant numbers of digital employers to lose business or orders to competitors, experience increased operating costs, and have difficulties introducing technological change. Outsourcing work was also a common implication, mentioned by 39 per cent of digital employers and 31 per cent of creative employers, compared with 26 per cent of all employers.

The main responses to experiencing skill shortages were to use new recruitment methods or channels, particularly by digital employers (52 per cent of digital employers compared with 35 per cent of creative employers and 30 per cent of all employers) and to increase advertising or recruitment spend, particularly by creative employers (47 per cent of creative employers compared with 37 per cent of digital employers and 39 per cent of all employers). Only three per cent of employers with skill shortages said they would increase salaries to attract more suitably skilled employees, compared with four per cent of all employers.

In relation to skill gaps these were seen to result from staff being only partially trained or being new to their role. Digital and creative employers also reported that skills gaps resulted from staff not receiving the appropriate training (35 per cent of digital employers and 29 per cent of creative employers, compared with 27 per cent of all employers), the introduction of new technology (25 per cent of digital employers and 22 per cent of creative employers, compared with 19 per cent of all employers), and digital employers were more likely than others to mention that the development of new products or services caused skills gaps (23 per cent, compared with 18 per cent of all employers).

The skills that needed improving were most commonly planning and organisation skills, reported by 64 per cent of digital employers and 61 per cent of creative employers compared to 52 per cent of all employers. Other skills which digital and creative employers were more likely than other employers to report needing improving were advanced IT or software skills, strategic management skills, and office admin skills. In addition, technical or practical skills were commonly mentioned by digital employers, and written communication skills were commonly mentioned by creative employers.

Skills gaps were having a major impact on how the establishment performed in 18 per cent of digital establishments and 20 per cent of creative establishments, compared to 15 per cent across all sectors. The main implications of skills gaps were increased workload for other staff and increased operating costs, as was the case across all firms. However a particular issue for digital and creative employers is delays in developing new products or services, mentioned by 39 per cent of digital firms and 37 per cent of creative firms compared to 25 per cent all firms. Clearly this represents a significant challenge if the sector is to maintain and extend its international competitiveness and realise its full potential to contribute to the UK's economic recovery.

Despite the prevalence and impact of skills gaps, digital and creative firms were less likely than those in other sectors to have taken steps to improve the proficiency or skills of staff with skills gaps. Seventeen per cent of digital firms and 19 per cent of creative firms had not taken any steps and did not have plans to take any steps, compared to 11 per cent of all firms. The actions that were taken were broadly in line with those across all sectors, most commonly increasing training activity/spend or increasing or expanding trainee programmes, more supervision of staff, more staff appraisals/performance reviews, implementation of mentoring/buddying, scheme, and re-allocating work. Digital and creative employers were more likely than those in other sectors to do more supervision of staff, and reallocating work.

Wages

Another potential indicator of mismatch between demand and supply for skills is earnings as where skills are scarce wages tend to rise. Table 6.3 sets out the latest data from the Annual Survey of Hours and Earnings (ASHE, 2011) on a number of industries in the digital and creative sector. Data for the sector as a whole are not available. Generally wages in the sector are relatively high, reflecting the highly qualified nature of the workforce. However over the past year in most of the sub-sectors in Table 6.3 earnings growth has been negligible. The exception is for employees in programming and broadcasting activities. Broadcast technology and engineering is area of skill shortage due to ' a combination of lack of new recruits, deficiencies in higher and further education, ageing of the current workforce, lack of framework for continuing professional development and the pace of technological change' (UKCES forthcoming b).

Table 6.3 Gross weekly earnings in the digital and creative sector

Sector	SIC Code (2007)	Median (£)	Annual % change	Mean (£)	Annual % change
All Employees	-	403.9	0.0	491.4	0.8
All Service Industries	-	384.4	0.1	478.0	0.7
Telecommunications	61	603.0	2.4	701.1	1.4
Computer programming, consultancy and related activities	62	677.1	-1.9	774.3	-2.6
Information service activities	63	667.1	0.8	756.7	-0.4
Repair of computers and personal and household goods	95	432.8	1.7	510.6	6.1
Publishing activities	58	489.6	0.9	600.3	5.5
Motion picture, video and television programme production, sound recording and music publishing activities	59	575.7	0.7	674.5	2.1
Programming and broadcasting activities	60	754.4	11.4	902.7	10.7
Advertising and market research	73	498.6	0.5	658.0	0.4
Other professional, scientific and technical activities	74	432.8	-5.8	539.1	-0.6
Creative, arts and entertainment activities	90	423.5	-0.9	486.1	3.6
Libraries, archives, museums and other cultural activities	91	404.7	-1.2	431.4	0.3

Source: ASHE 2011, provisional data

6.4 Conclusion

The labour market in the digital and creative sector is relatively lively, as evidenced by the disproportionately high level of vacancies. However the supply side of the labour market is not matching demand and skills deficits could handicap the capacity of the sector to contribute to future economic and employment growth.

There is a range of evidence of significant excesses of demand over the supply of skills in the digital sector particularly for highly qualified and experienced professional and technical staff including: high average wages, persistent reports of skill shortages, use of migrant labour. As a result new products are delayed, orders are lost and competitiveness is weakened. The workloads of existing staff have also increased, which can contribute to staff turnover and a further loss of the skills.

There are pockets across the sector where shortages are particularly severe. The average wages of broadcast engineers have risen by over 10 per cent in the last year as a result of persistent skill shortages caused by deficiencies in the quantity and quality of supply.

Part of the problem would appear to be related to a relative shortfall in the level of initial supply and larger numbers of young people developing the range of skills required to work with digital technology either through higher education or possibly advanced-level apprenticeships is likely to contribute to a solution.

However the number of graduates with digital technology related degrees does not appear to be the extent of the skills challenges facing the sector. Other problems include the quality of graduates and the skills they can bring to the workplace. To improve both the quantity and quality of their recruits there is some evidence that employers are seeking to widen their recruitment pool. Attracting more women, particularly to the digital side of the sector, would be one way of achieving this.

In the next chapter we pull together all the evidence on the skills challenges facing the sector and examine all the potential solutions.

7 CONCLUSION

7.1 The Sector Today and Tomorrow

In many ways the digital and creative sector has been one of the UK's major successes over the past ten years. The UK has one of the most influential and successful creative sectors in the world. It is the largest producer of creative goods and services in Europe, and sits alongside the USA and Japan in terms of creative industry global market share. The creative sector has a key role to play in innovation and is the primary location of the skilled individuals who produce creative ideas and make innovation happen. The digital technology sub-sector is one of the most productive and fastest growing parts of the UK economy. Information and communication technology and in particular digital technology is playing a major role in driving up productivity across the economy. The sector is, therefore, of particular importance to the current and future UK economy, and, as one of six sectors, is at the forefront of Government growth strategy.

The challenge for the UK's digital and creative sector is therefore how to further improve its productivity and competitive edge. In this final section we consider the role that better skills can play in meeting that challenge.

7.2 The Performance Challenge

In such a fast moving sector, at the forefront of innovation and technological change, standing still is not an option. While they are not the only source of competitive advantage the skills of the workforce need to be continually refreshed too to realise the opportunities to:

- Maintain the premier global status of the digital sector and leading technological developments and applications to create world-beating solutions – the UK is relatively more specialised in communications, and computer and information services, than its G7 counterparts.
- Win an increasing share of the growing international creative market, and becoming a core player in the economy driving productivity and innovation within all areas of industry, and generating more GVA than the financial services sector.
- In partnership with government and educators, ensure the UK has the capability to be a global leader in delivering value from digital technology and creating world-class creative content, with the consequent benefits in terms of job and wealth generation across the whole economy.

To realise this ambition the sector will have to overcome a number of the key challenges outlined in previous chapters:

- Recruiting sufficient high level skills to support the predicted growth, particularly in the digital side of the sector. The sector will need to recruit around 80,000 managers, professionals and associate professionals per year to 2020. Of these, 30,000 are in the digital sub-sector and 50,000 in the creative sub-sector. The key issue here is one of quantity and first attracting enough applicants to higher-level courses and then ensure the sector is a place that they want to work
- Ensuring that the education and training that young people receive in their initial education is of sufficient quality to keep pace with the technological and business changes, particularly in the creative sector and ensuring that they develop the skills and attributes required to thrive in the modern labour market as an employee or in a self-employed career;
- Getting employers to invest more in workplace training to enable employees to have the opportunity to refresh their technical skills in a fast-changing environment and develop more generic skills to enable them to maximise their productivity.
- Finding ways for the large number of small employers and free-lancers in the sector to work together to provide workplace training more efficiently.

In the next section we discuss the potential solutions that employers can adopt or become involved with to drive up the skills and performance of the sector's workforce. The challenges and potential solutions are summarised in Table 7.1.

Table 7.1 Meeting the challenges facing the digital and creative sector

Challenge	Solution
Increasing the quantity of graduate entrants to the sector	Widen recruitment pool to e.g to bring in more women Develop more high-level vocational routes into the sector (e.g. through advanced/higher apprenticeships) Increase the range of information advice and guidance available to young people Improve working environments through further high performance working and employee engagement
Improving the quality of graduate entrants to the sector	Encourage employers to work more closely with education and training providers to influence and lead the design of provision Develop more accredited courses to guarantee their quality Provide more work experience placements and internships
Raising the levels of workplace training	In-house training and more continuous professional development (cpd)
Encouraging increased training among small employers	Encourage small firms to collaborate eg through: Voluntary levies, clusters and employer networks such as group training associations (GTAs)

7.3 Growth through skills

In this section briefly review each of the solutions outlined in Table 7.1 in turn and, where available, point to examples of where policy bodies or employers have developed appropriate initiatives. However all these existing efforts would be more effective if more employers became involved and adapted these ideas to their particular needs, to the benefit of the sector as a whole.

Widening the recruitment pool

One way of increasing the number of computing graduates is to encourage more girls to apply for courses. The gender imbalance both in the sector and in HE applications was identified in previous chapters. Established employers and employees can play an important role in de-stereotyping computing careers among young people and demonstrating the opportunities available.

The school-based initiative Computer Clubs 4 Girls brings technology to life through projects based on music, fashion and celebrity to inspire them to consider careers in IT (see box).

Computer Club for Girls (CC4G)

The Challenge

Girls as young as eight are turning away from IT because they consider it unappealing and geeky. They are unimpressed with what they see as a 'boy-topic'. As a result, young women are missing out on exciting and rewarding careers, and organisations are missing out on half the talent pool.

“There are few careers more relevant, creative, varied and rewarding than IT – it touches everything – and Britain is good at it! We need to find the best talent and what makes that doubly difficult is not enough girls are exploring IT as a potential career.”

Craig Wilson, HP Enterprise Services, MD and VP, UK and Ireland

The Approach

CC4G's after-school clubs inspire girls aged 10-14 to consider IT-related futures by bringing technology to life through projects based on music, fashion and celebrity. Incorporating leading edge online resources, the latest version has been developed by Aardman (of Wallace and Gromit fame).

The benefits

Eighty four per cent of girls undertaking CC4G state they are more likely to consider further education or a career in technology as a result, and 98 per cent of teachers who run the clubs say that members' IT confidence levels have improved. This is great news for young women, the gender imbalance issue, employers and the economy.

Employers can sponsor a CC4G club for a year for £500, and many employers support their local clubs by going in and supporting the girls in their work. FDM Group, an international IT services provider, recently sponsored clubs at schools in its three UK locations – London, Brighton and Manchester.

"Some of the most rewarding careers are in IT, because it involves creativity and innovation. Technology is very much at the forefront of business success nowadays, not at all the 'geeky' back-office stereotype that the industry has developed throughout the years. We are delighted to be sponsoring CC4G and are committed to supporting and encouraging more women to get into IT through initiatives like this."

Sheila Flavell, Chief Operating Officer, FDM Group

Source: <http://www.e-skills.com/education/sponsor-a-school-computer-club/>

New degree courses combining IT and business, such as the Information Technology Management for Business Degree developed by e-skills (the Sector Skills Council (SSC) for the digital sector) leading companies and universities, have been successful in attracting female applicants (see <http://www.e-skills.com/ITMB>).

Employers can also look to recruit talent from unemployed graduates and others with an aptitude for IT (as the Allstate Northern Ireland case study illustrates)

Case study: Allstate Northern Ireland

Allstate Northern Ireland (formerly Northbrook Technology) is a subsidiary of the Allstate Corporation, an American insurance company with 14 million policy holders, to which it provides IT, administration and call centre services.

The Challenge

When it opened in Northern Ireland as a start-up venture it faced a major problem in recruiting mainframe engineers from the small pool of experienced and qualified IT graduates. The business targets laid out by the parent company required it to expand from almost nothing to 250 employees in three years. Being a newcomer with unknown credentials made it difficult to persuade people to join when competing for skills with more established local rivals.

The Approach

The company decided to recruit unemployed or under-employed non-IT graduates and train them as professionals in IT skills. Recruits were carefully selected by pre-selection

interview and recruitment tests to have a strong aptitude and commitment despite lacking a technological background.

A structured 16 week programme, **Bridge to Employment**, was based around three phases:

- **Phase 1** provided foundation training and introduced the graduates to the fundamentals of IT
- **Phase 2** focused on specific training in mainframe technologies
- **Phase 3** a project placement to consolidate learning

The training was delivered in groups of 16 and included instructor-lead training, practical group work, workshops and exam preparation (amounting to 35 hours a week), plus on-job project-based activities and five hours a week 'homework'. A range of soft skills training covered effective communication, team working and an understanding of the environment.

The Benefits

The programme ran 17 times over four years. Of the 430 people who joined, 402 successfully became mainframe Software Developers with NTNI. Almost 90% were rated 'very good' or better and subsequently over 90% of those classified as 'very good or higher' gained promotion. Since it started, over a third of all technical staff have been recruited via the programme.

The company has continued its investment in staff, being awarded liP Gold Status in 2009, and winning two Talent Management awards the same year.

Source:

<http://www.investorsinpeople.co.uk/MediaResearch/CaseStudy/Pages/CaseStudyDetails.aspx?CSID=62>
<http://www.delni.gov.uk/index/publications/pubs-misc/iip-case-study-ntni.htm>

Developing more high-level vocational routes into the sector (eg through apprenticeships)

For some young people a higher education course is not the most appropriate way of developing higher-level skills and the growing number of apprenticeships offer a more practical and attractive route. For example, the Creative Apprenticeships launched by Creative and Cultural Skills SSC, which have seen over 900 young people gain employment in the creative industries (see the Wales Millennium Centre in Chapter 5 and the BBC case study below). There is scope for more employers to get involved education and training providers to improve existing and develop new vocational qualifications as technology evolves and the jobs in the sector change.

Case study: BBC

The Challenge

The BBC will experience a “massive year” in 2012, as host nation Olympic broadcaster as well as covering the Cultural Olympiad and the Queen’s Diamond Jubilee. As part of its commitment to ensuring the London 2012 Olympic Games leaves a lasting legacy for audiences, it launched its first apprenticeship scheme in London in 2010, specifically aimed at people who wanted to gain a qualification while working, rather than through the traditional university-based route.

The Approach

The apprenticeship in Creative and Digital Media is focused on two entry level jobs in television production – a runner, and a production management assistant. The programme runs for a year, and production skills are learned ‘on the job’ through a rotation of work placement across the production departments and courses delivered by the BBC Academy. The apprentices attend Westminster Kingsway College for the formal academic programme. They are supported in the workplace by a line manager and a mentor.

The scheme is successful in attracting apprentices from a variety of entry routes – *“It’s really important to us that the BBC reflects the many different backgrounds of the people who make up our audiences. This new scheme takes a significant step towards making entry into BBC employment more accessible and will help create a more socially inclusive workforce”* Lucy Adams, Director at BBC Business Operations.

Caroline Prendergast, Skills and HR director at BBC London 2012, adds *“The apprenticeship will deliver a skills legacy for the individual and the BBC will gain a more diverse workforce whom we will work with to generate fresh programme ideas and content to appeal to new audiences.”*

The Benefits

The scheme is continuing, and the third intake commenced in January 2012. 80% of the first year apprentices went on to work on programmes such as Eastenders (BBC), Shameless (C4) and various programmes produced by BBC Children’s. Due to the success of the first year scheme, the second year apprentices secured placements not only with the BBC but also with its industry partners such as Endemol, Maverick, Talkback Thames and ITV, and the BBC 2012 – Scotland Apprenticeships were launched in September 2011 which will run up to and include the Commonwealth Games in 2014.

Source: <http://www.million-extra.co.uk/downloads/The%20Value%20of%20Apprenticeships.pdf>

Increasing the range of information, advice and guidance available to young people

The provision of careers advice in schools is changing and a new national Careers Service has been established in England. To support these initiatives and ensure that young people have the information they need to make choices about further and higher education and potential career paths and a number of specific initiatives have been established in the digital and creative sector. Examples include:

- Skillset Careers online site, established to help rectify the gap of relevant careers information, advice and guidance for the creative media industries;
- The Creative Choices website for careers in creative and cultural industries, and
- BigAmbition for ICT

However these initiatives need employer support to ensure they provide up-to-date and relevant information.

Improving working environments through further high performance working

Another aspect of the challenge to recruit sufficient quantity of new entrants to the sector is to make it an attractive place to work. In earlier chapters we saw that people working in the digital and creative sector had relative high levels of job autonomy and flexibility, factors associated with good quality and high performance working environments. However the sector scored less well on having the business processes in place to formalise such forms of working. As well as helping employers to align their approach to workforce development with their overall business plans, Investors in People accreditation provides potential recruits with a clear signal that an employers values their employees and the skills they have a develop.

The Metro case study (Chapter 5) demonstrates the value to employers of adopting a more formal approach to workforce development and the Content and Code case study below shows the benefits that employers can reap through maximising employee engagement at work.

Case study: Content and Code

The Challenge

Content and Code was co-founded in 2001 by the two co-directors who were both made redundant from the same organisation and took the opportunity offered to take over existing projects and finish them, and then began to grow into a highly successful software supplier offering information management solutions designed to help create, manage and distribute business content.

Over 2006-07 they lost many of their telesales team as a result of unstructured management, and were also finding it difficult to hire new people due to the tight labour market. These events were key to developing a new approach to people management including greater attention to staff retention issues.

The Approach

They worked closely with external consultants to develop a performance management system and bonus schemes to cover all staff, where previously only sales staff had the opportunity to earn bonuses. The schemes were designed to be transparent and enable all staff to benefit for helping deliver the levels of performance the organisation needs for success, and all staff were fully briefed about the schemes by the directors.

Alongside this there are a range of policies to foster engagement – flexible working, monthly awards, gym membership, health insurance – and there is a strong emphasis on team working, with teams able to take on significant responsibilities and generate ideas which can change the ways they work.

The Benefits

The organisation subsequently experienced rapid growth with gains in billable hours and customer satisfaction, and has won numerous awards – including 2010 Microsoft Country Partner of the Year Award for the UK, and 2009 and 2010 Best Companies accreditation where they were awarded one star for “*first class*” staff engagement.

Source: <http://www.ukces.org.uk/publications/er19-hpw-employer-case-studies>

Encourage employers to work more closely with education and training providers

The quality of further and higher education courses has been criticised, particularly for not keeping pace with fast-moving sectoral developments, for instance in the visual effects industry. The more employers are involved in both the design of courses and their delivery the more likely they are to provide the right opportunities for students to develop industry-relevant skills. National Skills Academies (NSA) are one way in which employers and education and training providers can collaborate and NSAs and other networks exist in various parts of the sector:

- The National Skills Academy for IT, provides access to online courses and resources, and brokers apprenticeships
- Skillset Media and Film Academy Networks are enabling education and industry to work together to produce the innovators and leaders of the future
- The National Skills Academy for Creative & Cultural, a network of 230 employers from Theatre and Live Music and 20 Further Education Colleges across the nine English regions, was set up in April 2009

- The IT Management for Business degree was created by e-skills UK in collaboration with over 60 leading sector employers. It is designed to give individual's the technical business and interpersonal skills they need to succeed in the industry. Employers inform course design and deliver some content. One third of ITMB students are female which is much higher than the average for all computing and IT courses and all graduates from the degree are either employed or engaged in further study (e-skills UK, 2012).

Develop more accredited courses to guarantee their quality

One way of ensuring that courses are industry-relevant is for employers or employer bodies to quality assure them, for instance Skillet's Pick the Tick scheme. The scheme is a kitemark of quality indicating the media degrees and universities best suited to prepare individuals for a career in the Creative Industries. Courses or institutions are assessed by experts working in the Creative Industries. The Tick is awarded to those courses and universities that have the strongest links with industry and the higher than average proportion of graduates from accredited courses who find work in the sector suggests the scheme is meeting employer needs (UKCES, forthcoming b). The Tick is also a signal to potential students of the value of a course.

Provide work experience placements

Another way of ensuring that students develop the skills to apply the knowledge they acquire through their higher or further education course is for employers to provide work experience placements or internships. They provide opportunities for students to learn practical and workplace skills and can enhance their employability (Ball, et al., 2010). They can also offer employers a potential recruitment channel. E-skill's professional placement scheme is one example of how employers can get involved in such an initiative. (<http://www.e-skills.com/education/he-and-fe/student-placements-e-skills-internships/>).

In-house training and more continuous professional development

Employer investment in workforce development is relatively low in the digital and creative sector and one of the reasons is that employers are reluctant to invest is the cost of training. Working with further and higher education institutions to develop continuous professional development programmes may be one way of investing more cost effectively (Nesta, 2011).

Encourage small firms to collaborate to train efficiently

The sector has a high proportion of small employers and sole traders who often find it difficult to source and organise training effectively. They are also concerned that if they train employees, they may take the benefits elsewhere and leave for another employers, although the evidence suggests that employees who receive training are in fact more likely to stay with their employer than those who do not (Garrett et al., 2010). However one way of minimising concerns among small employers of incurring the costs of training, but not seeing the benefits is through a **voluntary training levy**.

The Skillset Skills Investment Fund (SIF) is an important initiative in relation to skills supply in the audio-visual industry. The SIF is the training levy on productions filmed wholly or partly in the UK, and provides the industry with an innovative shared approach to investing in its own skills and talent. Money from SIF, which is calculated as a 0.5 per cent of the production budget up to a maximum contribution of £39,500, is used to fund new trainees coming into the industry in priority grades, and to provide specialist training for existing professionals. Thus the training ensures the skills of the current workforce are up to date with the latest technologies and changing roles within the industry.

Linked to the levy, the Skillset Craft and Technical Skills Academy's Trainee Placement Scheme provides SIF contributors with heavily subsidised trainees and matching productions with the best new talent in areas such as camera and lighting, editing and production sound.

One way in which small employers can work together to provide training and, for example provide apprenticeships is through employer networks such as **Group Training Associations**. Clustering is also common in the sector and provides employers the opportunity to collaborate locally on the provision of training. Such arrangements or other forms of collaboration between employers and partners can potentially be funded through the UK Commission's Growth Innovation Fund or Employer Investment Fund. This fund supports employer-led initiatives to increase the contribution skills make to enterprise, jobs and growth and helps to achieve the UK Commission's ambition of transforming the UK's approach to investing in skills.

7.4 Business benefits

As outlined throughout this paper, investing in skill development can bring a range of benefits individual, employers and wider economic and societal perspective as demonstrated in the comprehensive review of the value of skills undertaken by Garrett et al., 2010)).

Generally the possession and acquisition of skills and qualifications is directly associated with an individual's employment and earnings prospects. Garrett et al. (2010) outlined the economic return to higher level academic qualifications (ie Bachelor degrees and above) and also apprenticeships. There are significant benefits attached to apprenticeships, from an individual's and employer's point of view.

Individuals completing an apprenticeship can expect to receive a wage premium from doing so. A man who completes an apprenticeship (Level two) will, on average earn 20 per cent more than an otherwise similar male with their highest qualification at Level one or two (with the exception of an apprenticeship). For females the equivalent figure is lower at four per cent. Advanced apprenticeships (Level three) return a premium to male holders of 22 per cent compared to otherwise similar males with their highest vocational or academic qualification at Level two. At 14 per cent the return to females at this level is higher compared to apprenticeships.

The time it takes for employers recoup the costs they incur in providing apprenticeships varies by sector but is relatively short. The payback period can be as little 6 months for a mechanic apprentice in the transport sector whereas in engineering it can take around three years and seven months (BIS, 2012a). The benefit of providing apprenticeships most commonly reported by employers is improved productivity followed by improvements to product or service quality, better staff retention and the introduction of new ideas to the organisation (BIS, 2012b).

There are a range of business benefits that investment in training can bring employers. Evidence across a number of sectors suggests that employers who invest in training are more likely to survive than those who don't (Collier, *et al.*, 2007). While the digital and creative sector seems to have been less affected by the downturn than other sectors, the ability to capitalise on the recovery and other opportunities beyond will be enhanced by having access to the right skills.

The business benefits of training in the sector go beyond company survival. Businesses that are willing and able to innovate, and that do not see any inherent conflict between technological or creative excellence, and commercial excellence, will reap rewards through increased sales and turnover, and staff satisfaction and retention. Garrett et al. (Garrett et al., 2010) conclude that the investments employers make in workforce training raises productivity and firm performance across a range of measures.

Another way of looking at the benefits of training is to consider the costs associated with not developing the skills of the workforce. The digital and creative sector is suffering from pockets of key skill shortages, even in the current slack labour market, which are severely impeding new product development and growth. Also, reported skill gaps are relatively low. Where they do occur they tend to be among managers and professional where the value of a digital and creative business often lies. As the pace of technological change intensifies the need to update and refresh the skill base of the workforce can only increase. As the labour market recovers the ability to do so through recruitment will only become more difficult. Greater levels of employer investment in the existing workforce provide a cost effective alternative.

An example of the benefits to be gained from investing in skills can be seen in the Blueloop case study.

Case study: Blueloop

The Challenge

IT services company Blueloop, who employ 17 people in Somerset, started up over a decade ago with one large client. Initially Blueloop's directors were satisfied with their strategic direction and expansion. However, as a service industry, they were finding that they had to invest more in the business as they won each new contract, and needed to improve their profitability. As Blueloop began to recruit new middle managers for its growing business, they decided it was time to get formal systems in place to ensure that they could sustain their planned growth.

The Approach

Investors in People helped them to gain focus, and to tighten and link up systems and procedures so everyone understood their own role and the overall business direction. Blueloop gained Investors in People in just six months, and the team has continued to find it a useful business tool.

Robin Barker, one of the three directors who set the company up, said: *"Investors in People was more in-depth than we anticipated. It can help you manage not just your HR, but your productivity and profitability too. Originally it gave us a focus and it continues to do that. Investors in People itself has changed, and each year something is brought to the table which we haven't previously considered. It ensures that we, as managers, make sure we're on the ball."*

The Benefits

Turnover has increased by 80% since Blueloop began the liP process, with turnover topping £1m per annum for each of the past 3 years, and profits have increased. From having one large client at start-up, they now have 200 corporate customers, and business has expanded across the UK.

Blueloop continue to use use liP to improve their systems – staff have six-monthly appraisals, and the staff review system is monitored closely. But Robin Barker feels they can still improve: *"We put a lot of value in review, but we're not sure that we've got that right yet, and it's an area where liP continues to help us – for example, on finding*

effective ways of setting smart targets.”

Source:

<http://www.investorsinpeople.co.uk/MediaResearch/CaseStudy/Pages/CaseStudyDetails.aspx?CSID=287>

There are also wider benefits to consider. Generally the evidence suggests that higher levels of workforce training are associated with stronger productivity growth and economic prosperity. The UK Commission outlined that the potential economic gain from raising skill levels is huge (Garrett et al., 2010). However the role of the digital and creative sector in supporting the technological advances and innovation across the economy means that the economic gains can be multiplied.

There are wider societal benefits too from greater use of digital technology (for example in the education, health and care sectors) and creativity underpins large parts of the country's cultural infrastructure, which in turn support other sectors including transport and hospitality. Learning can also help to create a stronger and more stable society and contribute to individual well-being.

Bibliography

ASHE (Annual Survey of Hours and Earnings) (2011) Provisional results (SOC 200)

Table 4 – Industry. Office for National Statistics, Newport. Available:

<http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-235202> [Accessed 29th June 2012].

Ball L, Pollard E, Stanley N; (2010) Futures Report 471, Council for Higher Education in Art and Design; University of the Arts London; January 2010.

BIS (Department for Business, Innovation and Skills) (2010) Economic Growth, Economics Paper No. 9, BIS, London.

---, HM Treasury (2011) The Plan for Growth, March 2011. BIS / HM Treasury, London.

BIS (2012a) Employer Investment in Apprenticeships and Workplace Learning. The Fifth Net Benefits of Training to Employers Study. BIS Research Paper 67. BIS, London.

--- (2012b) Evaluation of Apprenticeships: Employers. BIS Research Paper 77. BIS, London.

Clifton, J., Dolphin, T. and Reeves, R. (2009) Building a Better Balanced Economy: Where will Jobs be Created in the Next Economic Cycle? IPPR, London.

Collier, W., Green, F. and Young-Bae, K. (2007), Training and establishment survival. Sector Skills Development Agency Research Report 20.

Data Service (2012) Statistical First Release Apprenticeship Supplementary Tables, March 2012, ONS. Available:

http://www.thedataservice.org.uk/statistics/statisticalfirstrelease/sfr_supplementary_tables/Apprenticeship_sfr_supplementary_tables/. [Accessed 29th June 2012].

Davies, B., Gore, K., Shury, J., Vivian, D. and Winterbotham, M. (2012) *UK Commission's Employer Skills Survey 2011: UK Results*. Evidence Report 45. UK Commission for Employment and Skills, Wath-upon-Deane. Available:

<http://www.ukces.org.uk/publications/employer-skills-survey-2011>

Department of Culture, Media and Sport (DCMS) (2011) Creative Industries Economic Estimates, December 2011. Department of Culture, Media and Sport, London.

e-skills UK et al. (2009) Strategic Skills Assessment for the Digital Economy, e-skills UK, Skillset, Creative and Cultural Skills

--- (2011a) Quarterly Labour Market Review, Issue 1, 2011

--- (2011b) Technology Insights 2011: Trends and UK Skills Implications

--- (2012) ITMB degree. e-skills UK, London. Available: <http://www.e-skills.com/education/he-and-fe/itmb/impact/>. [Accessed: 27th June 2012].

Eurostat (2011) Employment and Unemployment (Labour Force Survey). European Commission, Brussels. Available: http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/data/database. [Accessed 27th June 2012]

Garrett, R, Campbell, M. and Mason G. (2010) The Value of Skills and Evidence Review. Evidence Report 22. UK Commission for Employment and Skills, Wath Upon Dearne.

HESA (Higher Education Statistical Agency) (2011) Statistical First Release 153, Table 7. Higher Educational Statistical Agency, Cheltenham. Available: http://www.hesa.ac.uk/index.php?option=com_content&task=view&id=1936&Itemid=161. [Accessed 27th June 2012].

International Federation of the Phonographic Industry (FPI) (2009) Digital Music Report, International Federation of the Phonographic Industry, Switzerland.

IPA (2009) Social Media Futures: the future of advertising agencies in a networked society. A 10 year perspective. The Institute of Practitioners in Advertising.

Meager, N., Martin, R. and Carta, E. (2011) Skills for Self-employment. Evidence Report 31. UK Commission for Employment and Skills, Wath Upon Dearne.

Migration Advisory Committee (MAC) (2011) Skilled, Shortage, Sensible: Full review of the recommended shortage occupation lists for the UK and Scotland. Croydon: MAC.

MAC Secretariat (2010) "Which sectors and occupations use more immigrant labour and what characterises them? A quantitative analysis" MAC Working Paper, November 2010.

Moore, G. (1965) "Cramming more components onto integrated circuits" Electronics, Volume 38, Number 8, April 1965

Nesta (2010) Creative clusters and innovation: Putting creativity on the map, National Endowment for Science, Technology and the Arts

Nesta (2011) Next Gen. Transforming the UK into the world's leading talent hub for the video games and visual effects industries. A review by Ian Livingstone and Alex Hope, Nesta, February 2011

Ofcom (2009) Annual Report, Ofcom

ONS (Office for National Statistics) 2012 Statistical First Release Apprenticeship Supplementary Tables, March 2012. Available: http://www.thedataservice.org.uk/statistics/statisticalfirstrelease/sfr_supplementary_tables/Apprenticeship_sfr_supplementary_tables/. [Accessed: 5th July 2012].

Shury, J., Vivian, D., Davies, B. and Gore, K. (2011) Employer Perspective Survey 2010. Evidence Report 42. UK Commission for Employment and Skills, Wath-upon-Deerne.

Skillset (2009) Strategic Skills Assessment for the Creative Media Industry, Skillset

Skillset and CCS (2011) Sector Skills Assessment for the Creative Industries of the UK, Skillset and Creative and Cultural Skills

UCAS (2011) Data Summary. Total UCAS Applications, Applicants and Accepted Applicants Over Six Years. UCAS, Cheltenham. Available: http://ucas.com/about_us/stat_services/stats_online/data_tables/datasummary. [Accessed 27th June 2012].

UKCES (UK Commission for Employment and Skills) (2010) 'Skills for Jobs: Today and Tomorrow' National Strategic Skills Audit for England 2010 Volume 2: The Evidence Report. UK Commission for Employment and Skills, Wath Upon Deerne.

UKCES (2011) Almanac Online. UK Commission for Employment and Skills, Wath Upon Deerne. Available: <http://almanac.ukces.org.uk/default.aspx>

--- (forthcoming a) Sector Skills Assessment: UK information and communication technologies, UK Commission for Employment and Skills, Wath Upon Deerne.

--- (forthcoming b) Sector Skills Assessment: UK creative media and entertainment, UK Commission for Employment and Skills, Wath Upon Deerne.

UK Film Council (2009), Statistical Yearbook, UK Film Council, London.

Wilson, R. (2009) *The Future of Work and Implications for Education*. DCSF Beyond Current Horizons Programme, Bristol.

Wilson R. and Homenidou, K. (2011) *Working Futures 2010 – 2020, Evidence Report 41*, UK Commission for Employment and Skills, Wath-upon-Deerne.

Work Foundation (2007) *Staying ahead: the economic performance of the UK's creative industries*, Work Foundation

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UKCES

Renaissance House
Adwick Park
Wath-upon-Dearne
Rotherham
S63 5NB
T +44 (0)1709 774 800
F +44 (0)1709 774 801

UKCES

28-30 Grosvenor Gardens
London
SW1W 0TT
T +44 (0)20 7881 8900
F +44 (0)20 7881 8999

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