Digital and creative sector – skills overview

Dorset LSIP overview – March 2023

Introduction:

This short paper is intended to form part of the evidence that informs the development of the Dorset Local Skills Improvement Plan. It is not intended to be a comprehensive analysis of the skills landscape relating to the relevant advanced manufacturing and engineering sector. Rather, it is intended to be an overview of some of the main broad trends that have been highlighted in relevant research. It is intended to sit alongside the other work that has been developed to inform the Dorset LSIP – notably the direct business consultations, and analysis of other secondary data such as skills demand in job postings.
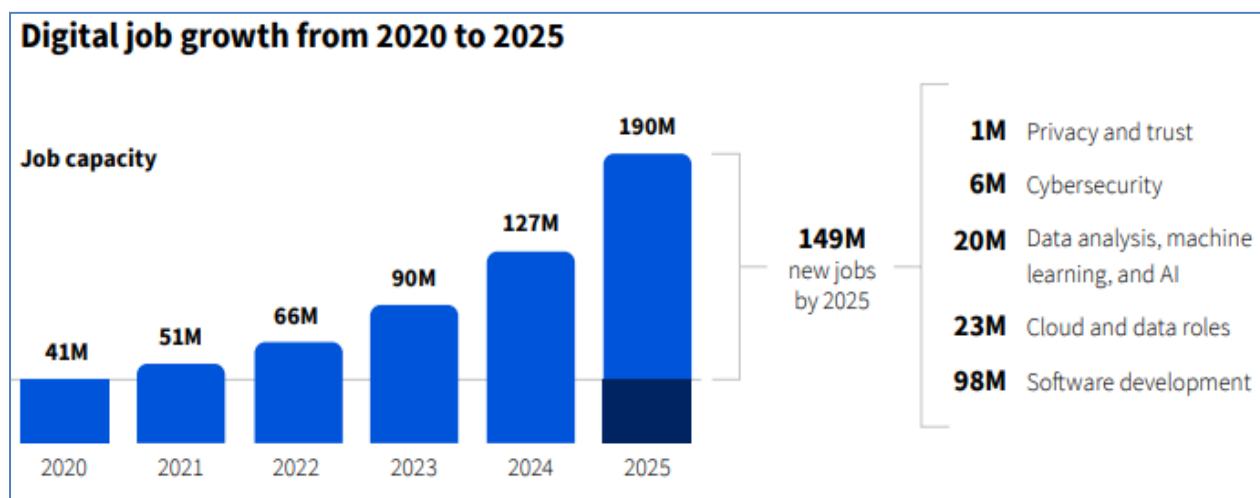
Digital skills, digitalisation and digital learning:

It is recognised that increasing the supply of digitally and tech enabled workers at all levels will be crucial for long-term economic prosperity, and to unlock productivity improvements across the economy. There have been estimates of how much this 'digital skills gap' costs the UK economy, and this is expected to widen as digital skills becomes more important. The UK ranks 41st in the world for digital competitiveness rankings for employee training.

Employers say that just under half of people leaving full-time education have the advanced digital skills required. Digital skills are now essential entry requirements for two-thirds of UK occupations and these occupations account for 82% of online job vacancies. In the manufacturing sector for example, 87% of employers say that basic digital skills are important for their workers. It is estimated that just under a third of all skill-shortage vacancies involved a lack of digital skills.

It is often cited that there is a 'hidden middle' within the UK workforce, with approximately one-third of workforce still lacking essential digital skills for work. This digital skills gap is particularly marked in those aged 55+, those working part-time, those in parts of the service sector, and those with no previous formal qualifications.

As is well documented, the pandemic quickened the adoption and use of digital technologies. According to research by the online learning platform Coursera (using Microsoft/LinkedIn data) it is estimated that two years' worth of digital transformation occurred in just two months. This quickening transformation extends the medium-term structural changes that are happening in terms of projected global growth of digital jobs – as shown in the below visual.

Digital job growth from 2020 to 2025

Job capacity: 41M (2020), 51M (2021), 66M (2022), 90M (2023), 127M (2024), 190M (2025)

149M new jobs by 2025

- 1M Privacy and trust
- 6M Cybersecurity
- 20M Data analysis, machine learning, and AI
- 23M Cloud and data roles
- 98M Software development

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Digitalisation as a term refers to the use of digital enabling technologies to introduce new products and services and to make processes more efficient and productive. Generally, it is seen as creating new opportunities in the increasingly sophisticated use of data. Digitalisation is seen as a cross-sector need (cross-cutting theme), rather being specific to one sector.

It is often cited that digitalisation will (is) change existing industries, create new ones and blur the boundaries between some sectors:

- Changes within **existing industries**, through the development of new products (e.g., smart devices), the automation of increasingly sophisticated processes and transactions and the advanced use of data in product development.

- The development of entirely **new industries**, such as cybersecurity, gaming, robotics, and so on, many of which are not yet captured in sectoral descriptions and data.

- The **blurring of sectoral definitions** as technologies converge. Businesses like Amazon and Ocado, can be defined as software companies, retailers, logistics operators, a market platform and a hardware manufacturer, all within an integrated technology-enabled model.

Research suggests that digitalisation will drive increased demand for higher-level technical skills; a need for more digital technology to be embedded across the curriculum in schools; a need to upskill the existing workforce in digital tech; a requirement to improve diversity in digitally advanced occupations; and a need to expand the supply of digital skills training.

Most studies find that technological advances lead to an increase in the aggregate number of jobs over time. But many jobs are likely to be at risk from automation. Over the short to medium term, it is anticipated that those jobs most vulnerable to automation are in 'less skilled' occupations; and with a significant impact on jobs in 'data driven' sectors, such as financial services7. However, in the longer term (looking to 2030 onwards), around 30% of current jobs are estimated to be 'at risk' of automation, including those requiring complex problem-solving skills.

There will be some personal service occupations that are relatively resistant to automation (for example in the care sector). But overall, the evidence is that *less well- educated workers will generally bear more the costs of automation* – with the implication that a focus on continued vocational learning will be needed as technology advances, as well as a on STEM skills across the sectoral and occupational range.

The Government-sponsored [Made Smarter](#) review of industrial digital technologies found that the UK has major opportunities for growth, especially among firms at the 'leading edge' of technology e.g. AI and machine learning in Europe. However, it also found significant barriers, especially associated with poor levels of digital technology adoption among SMEs. This is partly – although not exclusively – linked with widely-reported 'advanced digital' skills shortages. It is likely, given the strong dominance of SMEs within the local economy (such as across the Dorset LSIP area) and the relative absence of many large private sector 'anchor' employers.

In relation to future workforce skills, five major issues tend to be highlighted by research:

- The need to develop the supply of **higher-level technical skills**, especially through stronger university-industry links.

- Reform of the **school curriculum**, with digital technology embedded across subjects, (not just within the definition of 'ICT')

- The need to improve **digital skills within the existing workforce**, through opportunities for ongoing retraining and **adaptability** to rapidly-changing technologies

- **Inequalities in digitally advanced occupations.** Female under-representation is especially highlighted as placing an artificial cap on the labour market talent pool, as well as limiting individual opportunities

- Growing **diversity of skills supply**, especially given the volume of software and computing training available commercially and through semi-formal routes. This was highlighted [in a recent study commissioned by the CIPD of digital learning in a post-Covid environment](#).

This research found that there are many different supporting technologies, with the more emergent forms of digital learning technology including game-based learning, AI and the extended reality immersive technologies. Data on the usage and incidence of digital learning suggests its prevalence in the workplace has steadily increased, with usage now above trainer-led training and in-house development programmes. In the workplace, the top areas of growth in digital learning content are in: video; mobile; blended learning; user-generated content; microlearning; and curated content. Even before the stimulus of the pandemic, employers, vocational providers and higher education (HE) institutions had already been investing in their online learning development and delivery.

This growth has been driven by such factors as:

- technological change and advances (such as improved access to high-speed broadband, emerging applications such as artificial intelligence and virtual reality-based learning, and increased learner familiarity with technology that can support learning)
- learner expectations around flexibility of study
- cost and resourcing considerations, meaning employers are demanding shorter, faster and cheaper development programmes and courses that can be more integrated with an employee's 'day job'
- the widespread requirement for re- and upskilling of jobs in many employers due to technological and organisational changes.

Employers are increasingly demanding shorter, faster development programmes and courses that can be more integrated with an employee's 'day job', rather than requiring significant off-the-job learning.

Much of the evidence about 'what works' in digital learning and its effectiveness, particularly within the workplace, shows mixed results. However, the consensus seems to be that good-quality digital learning can be just as effective as traditional in-person/classroom learning – with the majority of studies finding little or no significant difference in the learning outcomes achieved. However, some research has shown that learners with 'weak academic preparation and those from low-income and under-represented backgrounds' on average underperform and experience poorer outcomes in fully online learning environments.

Retention of learning is improved in a digital setting, even if completion rates are generally found to be lower – attributed to learners having more control, allowing them to focus on the most relevant personal material.

However, it is unclear how this now fits with the recent announcement that maintenance loans available through the UK Government's proposed lifelong loan entitlement (LLE) will only be available for in-person courses, and not for those courses accessed remotely.

The Skills for Jobs white paper (January 2021), recognises the need to support FE staff to develop the skills they need to deliver a high-quality blended learning offering. The CIPD recommends that the Government ensures that sufficient funding is made available to upskill FE staff linked to the delivery of high-quality digital learning, especially in the context of accelerated use of digital learning or future demand for blended learning programmes. There is a focus on collaboration between employers and FE providers to develop flexible digital learning opportunities that are bite-sized, certificated through micro-qualifications or credits, and which can be packaged up over time into more substantive and recognised learning journeys. This should be underpinned by a 'common skills framework to support cross-sector moves'.
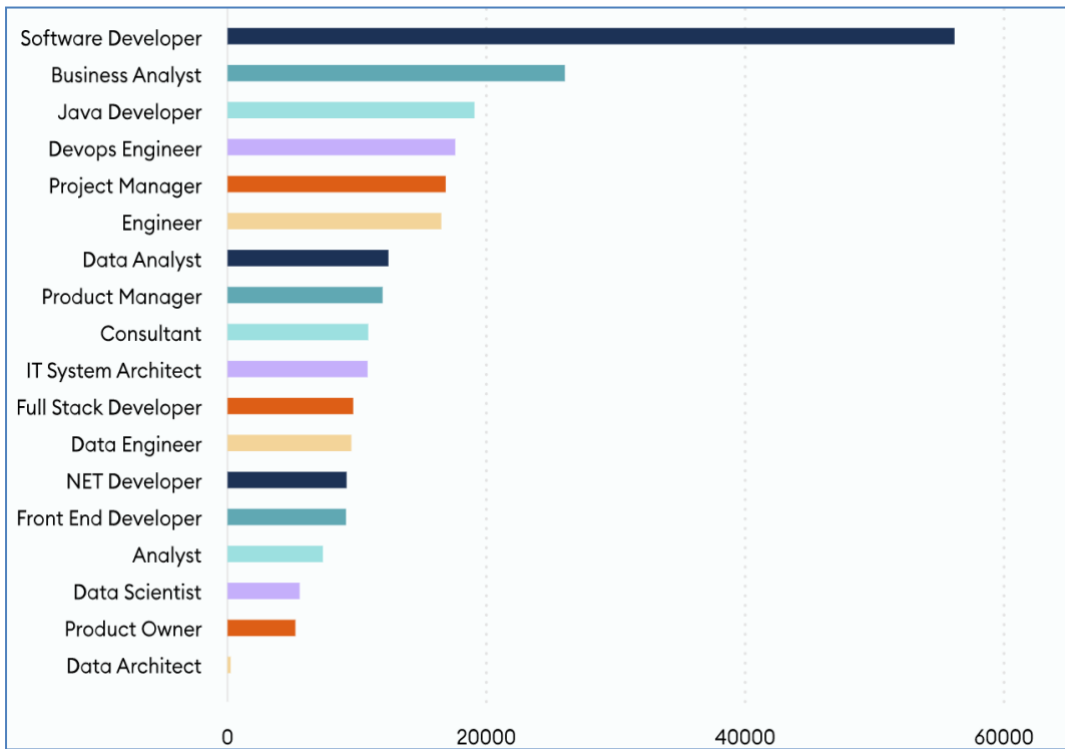
There have been some initiatives in this space already - including:

- In April 2020, the DfE launched the 'Skills Toolkit' – an online learning platform providing free access to digital, numeracy and employability courses to help people build skills, progress in work and, during lockdown, to maintain skills development during furlough. All courses are offered entirely online; they do not require any time-limited support such as seminars or online lessons; and offer a free record of completion (for example a digital certificate) to demonstrate the participant has completed a course. In September 2020, it was confirmed that the Skills Toolkit was being expanded to include a further 62 courses.
- The Digital Entitlement allows adults across England with no or low digital skills (below level 1) to study the new Essential Digital Skills qualifications (EDSQs) for free. From August 2023, DfE is going further by introducing new digital Functional Skills Qualifications (FSQs), which will provide standardised content and assessment, providing a clear benchmark of digital skills for employers.
- As part of Skills for Life, Skills Bootcamps in England have been launched, which offer free, flexible courses lasting up to 16 weeks. Skills Bootcamps include areas such as software development, digital marketing, and data analytics.

Digital Tech and Creative:

Across the UK, there were over 2m vacancies for tech roles between May 2021 and 2022, from a total 14.85mn vacancies across the economy as a whole, which includes part time and contract work. Nearly 5m people now work in the digital tech economy, up from 2.2 in 2011.

The digital tech and creative sectors have seen some of the largest increases in labour demand across the UK. Role such as software developers are consistently among the most sought after roles across the UK. There has been a significant increase in roles associated with AI, cybersecurity and cloud skills – all growing strongly in demand. As the demand for digital tech roles increases, demand for non-technical roles within the sector have been growing too. It is estimated that over one-third of people working in digital tech are in non-technical roles such as product management, user experience and sales. For example, the demand for product manager has grown by over 8x in the last year, highlighting the significance of non-technical roles in the sector.

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(Source: Tech Nation, Adzuna 2022)

Data and Architecture are the most in demand tech skills, jumping up the ranking after seeing growth in demand of over 1000% respectively from 2019 to 2021. Tech roles requiring data skills are becoming increasingly important. Over the past three years, 'data' has moved from third in demand to the most in demand skill across all tech jobs. However, people-oriented skills still hold an important place in tech role profiles, we see the likes of Management, Clients, Communication within the top 10 sought after skills in tech jobs.

Skill	2021 ranking	2020 ranking	2019 ranking	% diff growth 2019 - 2021
Data	1	3	3	1006
Management	2	2	2	602
Engineering	3	1	1	216
Security	4	4	5	671
Clients	5	5	6	546
Communication	6	6	7	610
Business Management	7	13	21	880
Software Development	8	11	10	494
Unit Testing	9	7	9	532
Project Management	10	9	11	547
Microsoft	11	10	8	422
SQL	12	16	13	541
Amazon AWS	13	25	30	769
Analysis	14	19	24	846
.net	15	12	14	461
Architecture	16	40	42	1074
Java	17	27	19	399
Javascript	18	23	25	482
Reporting	19	24	29	633
Automation	20	29	28	454

(Source: Tech Nation, Adzuna 2022)

Similar analysis of trending skills in technology and data science areas show that people are interested in learning software engineering and data analysis skills - as shown in the below graphic which highlights the top 10 trending skills (global market).

Technology	Data Science
Theoretical Computer Science	Python Programming
Programming Principles	Probability and Statistics
C++	Econometrics
C Programming	Machine Learning
JavaScript	Data Management
Data Structures	Machine Learning Algorithms
Web Development	Applied Machine Learning
Design and Product	Probability Distribution
Graphic Design	SQL
Mathematics	Deep Learning

(Source: Coursera – Industry Skills Report 2021 (using LinkedIn data)