



BCTG CONSTRUCT

Supervisory Skills Gaps within the UK Construction Industry





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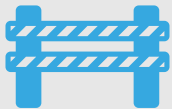
KEY FINDINGS



Personal Qualities, such as communication and people management, feature as the top three most prevalent supervisory skills gaps, as ranked by Employers and Educators.



Realised Impacts of supervisory skills gaps include: increased workloads for the wider construction team, higher operating costs, reduced productivity and profitability and difficulties meeting quality standards and introducing new working practices.



Key Barriers to providing supervisors with quality training opportunities were ranked by employers as: time to attend, cost of provision and a lack of relevant accredited training.



Effective Actions that could be taken to address supervisor skills gaps included: improving the relevance and quality of training activities and introducing mentoring/coaching schemes with improved on-site supervision.



Priority Subject Areas where training interventions should be targeted included: Quality Assurance, Inspection & Testing, Project Management & Site Administration and Building Information Modelling.

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FOREWORD

CITB is always looking to the future. Our aim is to improve training and qualifications and promote construction careers in a rapidly changing sector.

Every year the Levy CITB collects from construction employers is invested back into industry.

Our most recent funding impact report showed that, between September 2015 and December 2016, nearly £18m of CITB's Flexible and Structured funding was spent on over 300 projects in England, Scotland and Wales.

At CITB we recognise that skills gaps, particularly at the supervisory level, pose a threat to the construction industry. They can lead to reduced efficiency and productivity, unnecessary waste and an increased risk of health and safety incidents. Many firms find it increasingly difficult to recruit or upskill staff to the standards required.

One issue frequently raised by construction businesses is the importance of high standards of on-site supervision.

Our work with the Building Contractor Training Group Construct (BCTG) is a good example of how CITB supports innovative solutions to the industry's biggest challenges through our Flexible and Structured Funds. CITB's investment in BCTG Construct will go some way to addressing the problem through a modern approach to upskilling at a supervisory level.

I am confident that the project will support the delivery of our collective goals and help contribute to the longer-term prosperity of the industry.

I wish the project every success.

Sarah Beale, Chief Executive of CITB



Training and development play an important role in the effectiveness of organisations and to the experiences employees have in the workplace. Training has implications for productivity, health and safety and overall personal development and competency. It has been evident for some time that the skills gap has been widening in the construction industry, with many employers finding it increasingly difficult to either recruit or retain staff at varying levels. Supporting the needs of the workforce and providing learning and development opportunities provides greater knowledge, effective job planning and productivity – not to mention better service to clients and increased profit to organisations. The balance of work and learning can often prove challenging for both business and employees.

It is therefore essential that the sector embraces new digital/online learning platforms as a great source and solution to the barriers faced, as these provide flexibility and continued access to the individual at a low cost to the employer. As Chair of the Building Contractors Training Group I look forward to working with the consortium of partners involved in the BCTG Construct project to achieve the objectives set out – ensuring that the sector is training and retaining the best supervisor workforce to deliver outstanding service and results to customers.



Gary McDonnell, Chair of the Building Contractors Training Group





1. THE EVIDENCE BASE




1.1 INTRODUCTION

This publication explores perceptions of current and anticipated supervisory skills gaps within the UK construction industry. Part 1 provides an overview of the key challenges facing the sector, while Part 2 reports on new research relating to employer and educator perspectives of the skills gaps and the identification of effective and targeted training opportunities.

“The current system is confusing for many. Multiple entry points, a plethora of qualifications, a wide variety in the quality of training provision and complicated funding options can overwhelm and confuse businesses and individuals. This leads to inefficiency in the way the industry operates and reduces its overall competitiveness.”

HM Government (2013)





“ Contractors are having to bid far too low to make their businesses viable. The risks no longer match the rewards. If we don't want to see more major firms going into liquidation in the coming years, the Government, supply chain and private sector must work with main contractors to develop a new model for the industry. One that is more balanced and not based on the lowest priced bid alone but ultimately fair for all. ”

Abbas (2018)

1.2 UK CONSTRUCTION INDUSTRY

Around 10% of the UK population are currently employed within the construction sector¹. More than 280,000 businesses contribute almost £90 billion gross-value-added (GVA) to the economy each year, representing 6.3% of total Gross Domestic Product (GDP)². By 2025, the global construction market is projected to grow by more than 70%³. Total construction employment is estimated to have grown by around 104,000 over the last two years, equating to a 4% increase in the UK workforce⁴. However, to create the homes and infrastructure that are needed by 2025, the UK construction industry must recruit an estimated 400,000 workers per year - equivalent to one every 77 seconds⁵.

The recession that followed the financial crisis of 2008 had a disproportionately negative impact on the construction sector, leading to a loss of skilled individuals and resulting in changes to the scale and composition of the business base. Tough economic conditions and market uncertainty also resulted in a substantial fall in apprenticeship completions in construction related industries. Construction companies, large and small, now face increasingly challenging operating conditions, with more businesses than ever (20%) reporting skills gaps within the existing workforce⁶.

Whilst the industry has moved on from the challenges of 2008, the long-term impacts of the resulting 'race to the bottom' business model have been magnified by the recent collapse of Carillion, the UK's second largest construction company. New challenges are presenting themselves, and it is becoming clear that this operating model is no longer viable. The potential collapse of major contractors, who are reliant on a vast supply chain of smaller businesses, will invariably lead to adverse impacts further downstream both with respect to the loss of work itself and to outstanding payments not being made to the businesses that depend on them most.

Skills gaps and shortages have long been recognised as a recurrent problem and important concern within the construction industry and low investment in training consistently results in increased costs and low levels of productivity⁷. There were 25,000 vacancies between March and May 2015; 6,000 more than were reported the previous year⁸. In 2017, the construction sector in Scotland had the second highest density (46%) of vacancies which were difficult to fill due to skills shortages⁹.

In 2016, CITB surveyed 1,200 construction employers and self-employed individuals to gain insight into skills shortages and deficiencies, and take a snapshot of existing training and development activities¹⁰. They found that more UK construction businesses than ever (20%) reported having skills gaps within the existing workforce, suggesting an increase in prevalence in recent years¹¹.

“Saying that skills shortages are overstated is not the same as saying that they are unfounded. They are notoriously difficult to measure, hidden from view as companies work around problems by increasing the workload of existing employees, outsourcing work to other organisations or even adapting their product market strategies so that they are less dependent on a highly skilled workforce.”

NESTA (2017)



Without adequate supervision, construction activities across every phase of a project would not be achievable. Site supervisors are responsible for: “monitoring, evaluative review, reporting, and technical assistance activities to identify project challenges, ascertain, prepare and recommend solutions to at the earliest possible time”¹². It is essential that supervisors have the necessary training and experience as projects are reliant on their awareness and recognition of necessary indicators to other factors that could, for example, cause collapse of buildings. Without a sufficiently skilled supervisory workforce, a lack of quality assurance/control of on-site activities will result in sub-standard work practices such as non-adherence to specifications and standards. While these issues have numerous causes, inexperienced management and supervision has been identified as a key factor¹³. Poor quality workmanship, when discovered, results in costly rework. If undetected this can lead to structural failures which have far more serious consequences including fatalities, injuries, delays and major cost implications. Therefore, quality issues can affect the profit, performance and reputation of a construction business.

Issues with poor quality can be linked to inadequate supervision. If a supervisor is not capable of planning work, communicating with workers, and instructing activities then this is likely to lead to increased amounts (and costs) of rework and various quality issues. Most failures associated with the construction phase of a building project (e.g. defects, structural cracks, collapse) are the result of issues experienced during the execution, monitoring or control phases¹⁴. Damage to buildings has been shown to result from quality issues due to low quality materials, unskilled labourers and a lack of adequate supervision¹⁵.

“ **Productivity is being hampered by nagging skills shortages that are making recruitment a nightmare for small firms. As the UK moves towards Brexit, a technical skills black hole threatens the economy. The twin pressures of rapid technological change and Brexit make upskilling the current workforce more important than ever. Small firms clearly recognise the value of providing training for their staff, but it can be a struggle to find the time and money, and in some cases, even to find the right training locally. There’s a bigger problem with training among the self-employed who often find themselves so stretched that extra time away from the business can seem more like a burden than a benefit.** ”

Cherry (2018)

Effective supervisors must possess management, interpersonal, leadership, motivational, communication and organisational skills¹⁶, and be able to identify, track and respond to risks and any other issues that may affect the implementation of a project and the ultimate achievement of its objectives. Poor supervision can arise due to various pressures on businesses, smaller enterprises, micro businesses, and the self-employed, that prevent sufficient training of the existing supervisor workforce. Supervisory skills can be improved by on the job training and learning through experience. However, while trial and error learning is a key part of the training experience, this should be supplemented by more formal training where possible.

“ **Transforming the way we build requires the desire and confidence to invest, demand from clients and, as the Industrial Strategy recognises, government intervention. We just need to be clear about what we need to do and realistic about what’s possible. In particular, none of this will amount to much if we don’t also have the right skills in place to support this shift.** ”

Radley (2018)





If the labour requirements of construction projects are to be met, further work must be undertaken to increase the number of construction trainees and to improve the quality and variety of the training provided to existing supervisors. The industry thus faces a pressing need for a capable workforce that can deliver transformational change in the next decade. As the industry seeks to address the demands and challenges that lie ahead, construction businesses must be able to recruit and retain sufficient numbers of skilled, hard-working employees.

As with every challenge, opportunities are presented. The influential Farmer Report, and the collective recognition of the need for change within the industry, have both acted as key drivers for industry reform with respect to future investment and the development of skills and training. The publication of the recent Industrial Strategy, and the concurrent announcement of the Construction Sector Deal, have provided a clear statement from Government about the key role the construction sector plays in achieving inclusive growth and socio-economic development. Their commitment to continue to invest in major projects, to develop a new skills strategy and launch a new training scheme demonstrates a strategic intent to grow. This is an exciting time for skills training providers and educators alike, as it appears that the potential, the opportunity and the investment are now all in place to develop interventions that can enable businesses to identify skills gaps and ensure their workforce is suitably trained.

The BCTG Construct project is unique in the scope and scale of its partnership engagement strategy. It aims to deliver a transformative approach to curriculum design, development and delivery whilst strengthening and supporting collaborative working, innovation and the sharing of best practice across the education system and industrial landscape. It seeks to deliver access to quality personalised, contextualised and accredited training at any time, anywhere, and at an affordable cost. Our aim is to support supervisors to develop the skills they need to flourish in the workplace whilst presenting a new model of supervisor training that the industry considers an investment in people, in innovation and in long term- business performance.







1.3 KEY LABOUR MARKET CHALLENGES

The construction industry faces a number of significant challenges, none of which will be met without enough trained staff to carry out the work. Recent figures have shown that employment levels within the construction industry are 15% lower than in 2008¹⁷. An aging workforce and large numbers of early retirees will only serve to compound this issue and result in a significant skills deficit and the loss of a valuable teaching resource¹⁸. A recent report highlighted that the total number of workers aged 60+ in the construction industry had increased more than any other age group, while the greatest reduction was experienced in the under 30 categories¹⁹. The UK's impending departure, or 'Brexit', from the European Union will most likely put additional pressure on the skills system as immigration is restrained across the UK. Current business models will be challenged and will lead to a greater reliance on having a skills system in place that is more responsive, anticipatory of industry needs and consistently fit-for-purpose²⁰.

Young people, and their parents/carers/influencers, increasingly do not perceive construction to be an attractive sector in which to pursue employment²¹. It has become difficult to attract new talent into the sector, with most young people viewing jobs in the industry as low status, dirty or badly paid²². There is a general lack of awareness of the breadth of opportunities that are available within the sector. Further, while there has been a minor shift in the gender imbalance in the last few decades, women still only comprise a small percentage of the overall workforce.

 ***There are around 5.5m small businesses in the UK and the fact that construction firms account for one million of them is indicative of how essential it is for policymakers to ensure small construction firms continue to thrive...small businesses play a huge role in society, acting as vital job creators but also contributing a significant amount to overall economic activity...their success and survival, in equal measure, is absolutely essential.*** 

Sayers (2018)

...the most common source of skills gaps is that they are present in workers who are still being trained or are in their early stages of employment with an employer and haven't yet got sufficient experience or adjusted to the particular skills needs of that employer. Thus, an increased level of skill gaps is likely to reflect not only an influx of new workers into the industry ... but also increased mobility of workers from employer to employer as opportunities widened.

CITB (2016)

The economic downturn had a negative impact on the construction sector disproportionate to that experienced by other sectors, which led to a loss of skilled individuals and made it more challenging for companies to invest in new and existing staff at the same levels as before. A key issue has been the reductions to public funding for skills training for adults at a time where construction training demand has increased. The challenge of increasing employer investment in training, particularly within smaller firms, remains. Investing in the up or cross skilling of an existing workforce can be costly and time consuming, particularly to those with tighter margins and a lack of will to make decisions that could have a detrimental impact on profits. Further, many businesses and training providers have a shortage of staff able or available to train, teach or lecture on construction skills²³.

The industry has a highly fragmented structure (both vertically and horizontally) and unusually high levels of self-employment²⁴. The highly fragmented nature of leadership and decision making in the industry is underlined by a fundamental lack of collective responsibility for change and improvement²⁵. Construction employers have traditionally been recognised as having lower levels of participation in employee training and development relative to other sectors²⁶. Evidence has indicated that there is often limited opportunity for supervisors to undertake learning activities while still being engaged in their daily construction activities²⁷. This is particularly true of smaller businesses who are often unequipped to provide a broad spectrum of structured workplace training and is also exacerbated by the high level of self-employed workers who face an 'earn or learn' dilemma. Finally, the sector must prepare itself to be able to predict, recruit and develop people with new types of skills that will be required due to the modernisation of construction methods and the increased use of digital technologies required by the Construction Industry of the Future (Industry 4.0).



AGEING WORKFORCE

22%

22% of workforce over 50, with 15% in their 60s (Idox Group, 2016).



PUBLIC FUNDING CUTS

Just £140m issued back in grants from £180m of CITB levy (Farmer Report, 2016)

SECTOR ATTRACTIVENESS

2/3 of school leavers and graduates would not consider pursuing a career in construction (YouGov, 2016)

From boardroom to building site it is estimated women account for around 12.8% of the industry's workforce (ONS, 2016)

STRUCTURAL FRAGMENTATION

SMEs and Micro businesses comprise 90% of the construction sector footprint. (Arcadis, 2017)

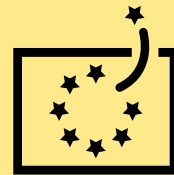
40% of total construction contracting jobs are self-employed compared with 15% across the whole economy (DBIS, 2015)



LOW PARTICIPATION IN TRAINING & DEVELOPMENT

53% of the workforce were trained in 2015, which is third lowest when compared with other industries (UKCES, 2015)

IMPACTS OF BREXIT



12.6% of construction workers across the UK are foreign-born (up to 50% in London and the South East) (Fraser, 2017)

Over 200,000 EU migrant workers could be lost to a hard Brexit (Arcadis, 2017)



DIGITAL LITERACY

Over the next 20 years, 90% of jobs will require digital skills (MACE, 2017)

CONSTRUCTION INDUSTRY OF THE FUTURE

Approximately 600,000 construction employees may need to be reskilled over the next two decades due to trades being vulnerable to technological change and new roles created by technology (MACE, 2017)

Figure 1: Key Challenges facing the Industry

1.4 SKILLS, KNOWLEDGE AND QUALITIES

Many businesses are underprepared for the changes that lie ahead. To address the growing skills crisis, it is vital that the right people are trained for the right jobs. The next decade will demand multi-disciplinary skills that enable integration right through the supply chain. The industry must therefore also be able to recruit and develop people with new types of skills to complement the existing set of traditional skills and competencies. Developing a long-term view of skills requirements is critical for employers as they '...navigate rapid, complex and uncertain shifts in the economy and society'²⁸. For the purposes of this report supervisor competence (**Figure 2**) has been divided into the following categories: Professional, Personal, Technical and Future/Digital skills and competencies^a.

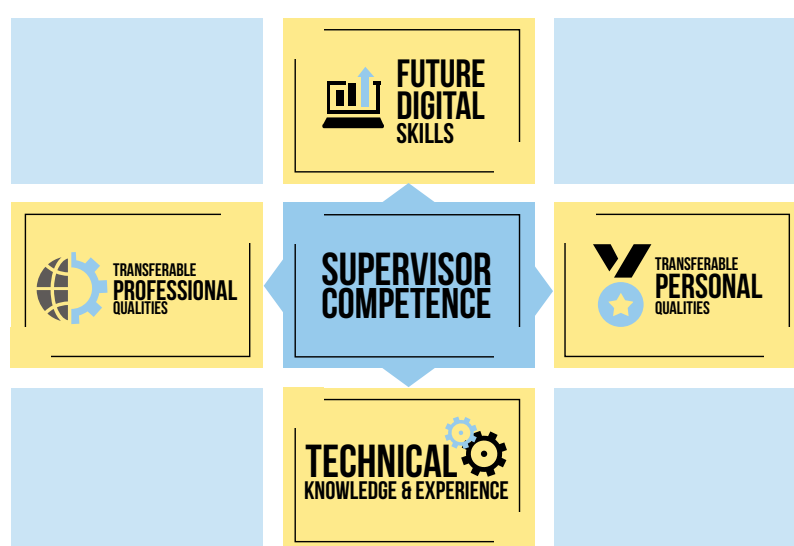


Figure 2: Skills required for Supervisor Competence (adapted from Medhat & Peers, 2012) ^b

Technical Knowledge and Experience is usually specific to the role and developed by gaining experience or participating in specialised training²⁹. Technological and social changes within the workplace have created a growing need for supervisors to develop more generalised cognitive and interactive skills over and above the more specialised or manual skills required for a specific discipline or role³⁰.

Professional Skills and Personal Qualities are non-role specific competencies (e.g., problem-solving, communication and organisational) that are transferable between roles and industries, and thus increase the versatility and adaptability of an employee³¹. Teamwork, communication and problem-solving skills have been identified as being in particularly high demand by industry and employees that can evidence these skills tend to be more employable³².

^a Core skills (e.g. reading, writing, numeracy) usually develop throughout an employee's school education and beyond. Since these skills are usually developed before an employee enters the workplace, they are not considered further herein.

^b Medhat & Peers (2012). A White Paper: T-shaped Learning for the New Technologist. <http://bit.ly/2elvA8F>

The development of these 'softer' skills can foster team work competencies and provide greater flexibility to employees³³. Such skills can also help employees to better understand the impact of their actions on others, helping to shift the workforce away from a 'blame culture' by instilling a sense of responsibility and encouraging team working. In a recent CITB survey³⁴, while general and trade specific skills were both identified as requiring improvement or updating, personal skills (e.g. attitude, motivation) were highlighted as particularly important³⁵. In recent years, policymakers and employers have increasingly focussed on understanding how to embed these so-called '21st century skills', which encompass intrapersonal, interpersonal and cognitive skills, into education and training systems³⁶.

The most significant periods of technological change in recent history have stretched over decades³⁷, while the skills-augmenting pace of technological change precipitated by Information and Communications Technology (ICT) has been exponential. If the industry is to fully embrace the digital economy, it will need to mobilise the country's brightest talent in order to effectively apply technology in our built environment. Almost half of small businesses in Scotland lack the basic **Digital Skills** that could help them increase their revenue, reduce costs and improve productivity³⁸. The anticipated changes represent an opportunity for the construction sector to re-skill workers, avoiding mass redundancies, and contributing towards addressing the need to find an estimated one million more workers for new occupations and sectors by 2024³⁹.

 ***We know that embracing digital technology can help businesses in every sector to be more productive. Firms risk being left behind unless they have the skills to take advantage of technology to remain competitive and responsive to their customers. If we can harness the digital potential of small firms, we stand a real chance of creating more world-beating businesses and boosting growth.*** 

Cherry (2018)

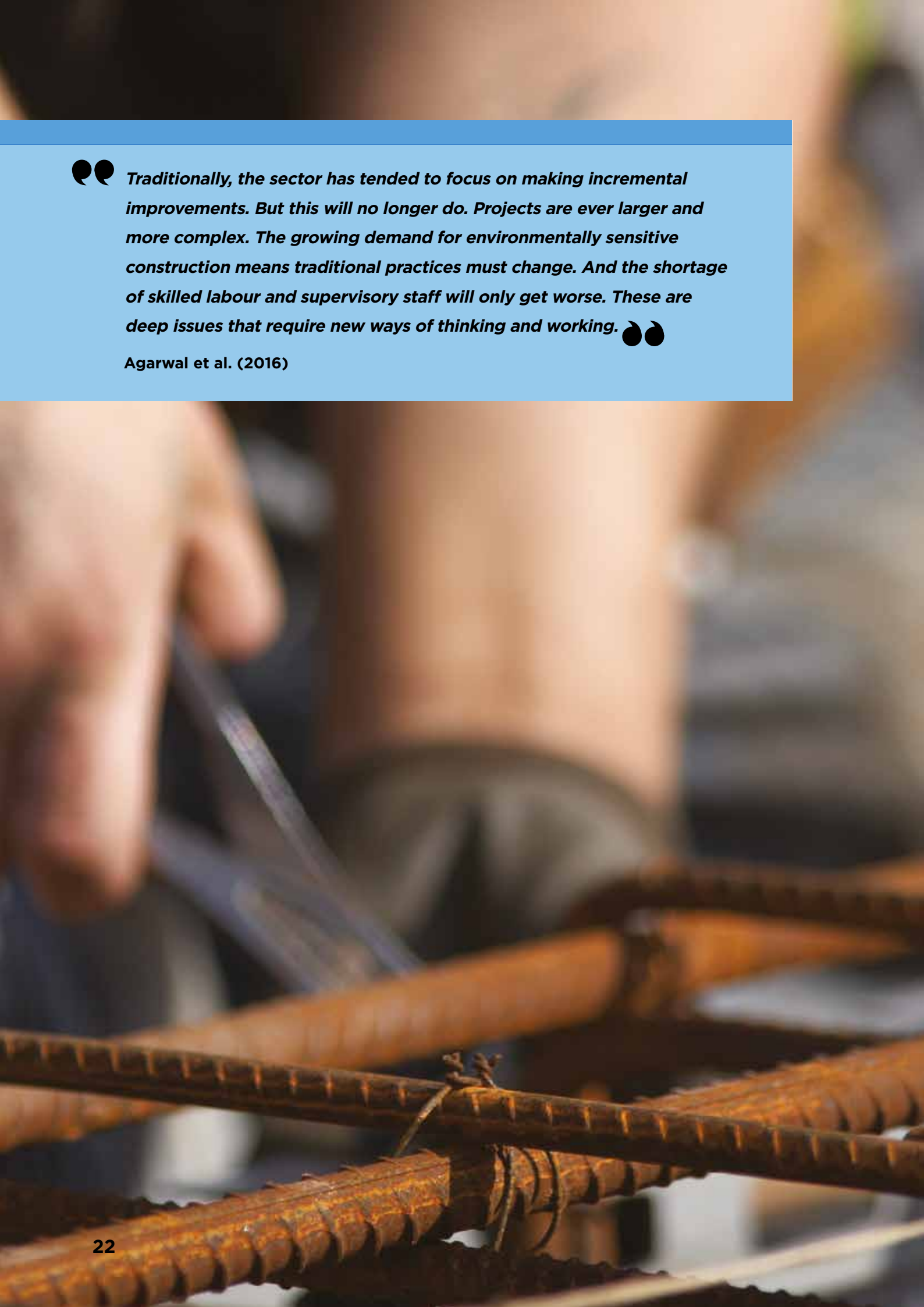
“ *Modern methods of construction such as off-site manufacturing, robotics and Building Information Modelling (BIM) have been available for some time but remain seriously underused.... even with this technology new skills and knowledge are needed to effectively use and maintain it.* ”

Arcadis (2017)

Finally, it is important to recognise that **Future Skills** demands may not necessarily be the same as those in demand currently⁴⁰. A recent report has predicted that 10% of the current workforce are in occupations that are expected to grow, with 20% in occupations that are expected to shrink⁴¹. This leaves 70% of the workforce in occupations where there is uncertainty about what will happen. Findings also suggest that the redesign of roles, together with retraining of the workforce, could help to promote growth in the ‘uncertain’ occupational categories.

Each of these skill sets contributes to the overall performance of a construction supervisor. To develop the competence levels of existing employees, employers must maintain a balance between training activities for each of these categories. The challenge facing the industry is to identify and target new recruits for skilled trades and the profession, and to address training and development needs for the existing workforce.



A close-up, shallow depth-of-field photograph of a construction worker's hands. The worker is wearing a dark blue shirt and is using a pair of silver wire cutters to cut through a piece of rusty, ribbed steel rebar. The rebar is part of a larger structure, with other pieces of rebar visible in the foreground and background. The background is blurred, showing more of the construction site and the worker's torso.

“ Traditionally, the sector has tended to focus on making incremental improvements. But this will no longer do. Projects are ever larger and more complex. The growing demand for environmentally sensitive construction means traditional practices must change. And the shortage of skilled labour and supervisory staff will only get worse. These are deep issues that require new ways of thinking and working.”

Agarwal et al. (2016)

1.5 TRAINING AND DEVELOPMENT

Employees are arguably the construction industry's most important asset. Research has shown that construction workers who receive regular training and development help their organisation to maintain competitive advantage by improving overall performance⁴². It is therefore important for construction businesses to focus specifically on addressing present and future skills gaps by providing employees with ongoing workplace training and development opportunities.

“**Construction companies are becoming progressively aware of the important role that workplace training plays in increasing productivity, improving staff retention, facilitating employee engagement, and changing organisational culture.**”

AIM (2009)

Businesses having difficulty finding suitably skilled staff report various negative impacts, including delayed project delivery and wages inflation. This clearly indicates that difficulties finding suitable staff are more than simple inconvenience. A key industry focus has been on the need to improve supervisory skills⁴³. Construction supervisors can determine the success or failure of a project. To be effective, they must have the capacity to respond to changing project requirements within a constantly evolving industry. Skills levels must therefore be maintained to ensure that outcomes are delivered efficiently and to a high standard⁴⁴.

Employers can make better use of existing employees and gain competitive edge by ensuring that supervisors are provided with skills training⁴⁵ that ensures that employees are trained to or above the desired competency level for their role⁴⁶. Research has shown that diverse skilled workforces are more flexible and reactive to changes⁴⁷. By ensuring their supervisors are multi-skilled, employers are free to organise their 'flexible labour force' dynamically in response to changing project requirements⁴⁸. A skilled workforce means that performance continuity can be maintained and employees are less likely to be left idle at the most uncertain points in a project⁴⁹. Staff turnover can also be minimised when organisations make a positive commitment to introducing capacity building training programmes⁵⁰. Supervisors that are technically proficient, but also have effective people, skills will undoubtedly result in a much safer, efficient and productive workplace environment.



However, while construction companies are more likely to deliver successful projects if they have competent and contented employees⁵¹, many supervisors continue to suffer from a lack of knowledge, skills and/or experience when faced with construction work tasks that are becoming increasingly more complex in nature⁵². Skills are often learned 'on the job', with managers, supervisors and operatives all improving their skills through experience of informal work based learning. More formal training delivered by colleges, universities and private companies also makes a key contribution to improving the productivity of the sector. Nearly two-thirds of organisations (62%) use CITB training plans⁵³. There is a noticeably higher use of CITB Training Plans among larger organisations, with 76% of medium and large businesses using them compared with 30% of micro businesses and 47% of small businesses. This reflects the frequency with which training is undertaken depending on organisation size.

“ Investment in workplace training that allows employees to systematically develop and upgrade their skills is essential for the enduring and sustainable success of any construction company. ”
Detsimas et al. (2016)

Workplace training can often be relatively narrow and relevant only to the needs of the particular employer⁵⁴. More training typically takes place among businesses working in commercial construction compared with domestic due to the requirement for a Construction Skills Certification Scheme (CSCS) card to work on commercial sites⁵⁵. Most of the training that takes place in the construction sector is compliance-led, for example health & safety, asbestos awareness and working at heights. The most prevalent type of training by far is the health, safety & environment (HSE) test, completed by 79% of the 611 respondents that had undertaken training in the past 2 years⁵⁶.

It is common within the construction industry for operatives to progress 'through the ranks' to supervisory and managerial levels. Such employees are therefore often technically proficient with strong company-specific skill sets, but can lack the broader range of people skills that typify a strong leader. Many mid-level supervisors and managers perceive there to be no training available to them and there is a general perception that the construction industry is not supportive of developing the capacity of their workforce⁵⁷. Employees are often not sufficiently supported or encouraged to develop and apply higher order thinking skills such as critical thinking, problem solving and the ability to reflect on, and learn from, experiences⁵⁸.

Ensuring compliance with government legislation, rather than capacity building, has tended to be a key motivator for the provision of training initiatives within the industry to date⁵⁹, closely followed by the introduction of new technologies, equipment or working practices⁶⁰. Training for existing supervisory staff tends to focus on immediate, technical and job-specific issues (including health and safety) rather than strategic, broad management and leadership issues aimed at enhancing business performance⁶¹. There appears to be limited appetite for, and awareness of, non-construction specific training such as business development and succession planning – particularly among micro businesses⁶². This suggests that they either feel confident that they do not need to provide training in these areas, or that they do not consider it to be of high priority compared with the training needed to demonstrate competence, win and undertake work.

 ***Much greater importance is attached to training for operatives (an average of 7.9 days per year) compared with senior managers and supervisors (average of 2.7 days each).*** 

CITB (2016)

It has become increasingly challenging to sustain the investment in supervisor training that is required to ensure the long-term sustainability of the sector. The emergence of students/apprentices as newly qualified tradespersons with limited experience and under developed skillsets may also impact on employer willingness to further invest.

It is clear that more effective mechanisms for facilitating the integration of experiences, skills and knowledge are required. To address the issues associated with career planning and to change training and development from a supplier-led to a demand-led model there is a need to encourage a more strategic approach to skills training and development across the industry. One potential solution could be to move older, more experienced operatives into a wider range of supervisory roles to curb attrition rates and facilitate the transfer of valuable knowledge within the workforce⁶³. Whatever the solution, without engaging in appropriate training, the supervisory workforce cannot hope to maintain competence let alone develop the knowledge and skills needed to adapt to changing business and client needs and make use of the latest technology and materials.

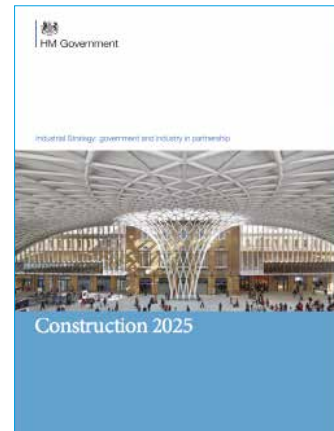


“ From ‘bridging’ and ‘plugging’ it, to ‘minding’ and ‘closing’ it, the nation’s skills gap is something that the industry loves to discuss, yet shies away from implementing practical solutions...the British government and the construction sector have been in denial for decades. Now we are beginning to see the consequences of this procrastination and a fragmented industry. Systematic under investment in the national workforce and a failure to heed the warning signs have contributed to a slip in productivity that currently sees the UK languish behind a host of other world economies. Meanwhile, capacity ceilings in some areas of the industry have seen prices jump and projects delayed. ”

Simon Light, Arcadis (2017)

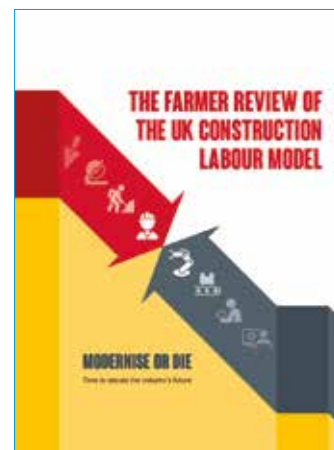
1.6 POLICY LANDSCAPE

The **Construction 2025 Industrial Strategy**, developed in partnership between government and industry and published in 2013, recognised that change was required to reinvigorate and improve public perceptions of the industry. There was an increasing recognition that supply will fail to meet demand for skilled workers if construction firms did not reconsider their approach to recruitment, retention and the delivery of training initiatives. Success in achieving the strategies strategic priorities was positioned as being dependent on having a 'skilled, motivated and diverse workforce'. The subsequent **National Infrastructure Plan for Skills** acknowledged the need to attract more skilled workers into the sector, and the importance of retraining and upskilling the existing workforce to improve productivity and performance, respond to changes in investment and prepare for modern methods of construction.



Commissioned by the Construction Leadership Council at the request of the Government, **The Farmer Report** was published in 2016. This report investigated the shortcomings of the current sector labour model, highlighting the dysfunctional nature of the sector's training model, and its lack of research and development, innovation or collaboration. The report concluded by warning that the industry must 'modernise or die', challenging the sector to do things differently. A series of actions were proposed to safeguard the industry's future and, amongst these, was the recommendation for a comprehensive review and reform of the Construction Industry Training Board (CITB), including a reorganisation of its grant funding model for skills and training to bring it into alignment with a future modernised industry.

The Construction Industry Training Board (CITB) has traditionally taken responsibility for leading both training and external industry promotion on behalf of the UK businesses from whom it collects a levy. A key strategic objective, until recently, was to ensure the industry has: "...the right people with the right skills in the right place at the right time". It sought to achieve this by reducing skills gaps and shortages by influencing the supply of education and training and providing increased opportunities for the training and development of the existing workforce.



In November 2017, CITB published **Vision 2020: The Future CITB** – a manifesto outlining plans for the modernisation and reinvigoration of CITB following a Government review. This three-year strategy will see CITB moving towards becoming a commissioner of outcomes, using Levy monies to ensure the existence of a sustainable training and development market and a six point ‘Agenda for Change’ includes the commitment to be: “...more relevant, representative and responsive to industry’s needs, from SMEs to major contractors”.

The recently published **Industrial Strategy** (DBEIS, 2017) sets out the Government’s long-term plan for: strengthening the UK economy, addressing productivity challenges, embracing technological innovations and supporting businesses and their workforce.

The Government and the construction sector, through the Construction Leadership Council, have also recently announced a £170 million **Construction Industry Sector Deal** that aims to transform productivity, reduce environmental impact and improve efficiencies by increasing investment in innovation and skills, creating new jobs and by increasing export potential.



The Sector Deal challenges the industry to cut construction costs by a third, reduce the length of time to build and refurbish assets by half, and deliver a 50% cut in emissions from the built environment by:

- **Encouraging a unified and more effective industry approach to promoting construction careers, and removing barriers to employment in the industry; helping the sector to recruit, train and retain a more diverse workforce, with higher levels of professional, technical and management skills**
- **Producing a Construction Skills Strategy aimed at retaining and retraining a workforce that is fit for the future**
- **Launching a new National Retraining Scheme that will help make sure workers have the right skills to match employer’s needs, including a £64 million investment for digital and construction training.**

“ The agreement embodies our vision for a modern Industrial Strategy, with government and industry working together in a strategic partnership towards the common goal of higher productivity, and a more skilled construction workforce with more earning power. ”

Greg Clark, BEIS Secretary (2017)

“ With a clear emphasis on building skills for the future, the deal commits the sector to adopting a new strategic approach to skills development, ensuring that standards and qualifications for the skills needed, now and in the future, are developed, and industry is able to use all sources of funding effectively. ”

HM Government (2017)





... those who can count, think logically, communicate in plain English, plan (safe) systems of work, calculate resources, and take cognisance of lead-in times will, by default, be managing the work safely. There is, of course, a difference between management and leadership, and the need for leadership skills do not stop at the boardroom. Supervisors who lead by example, communicate effectively and are able to utilise those soft skills needed for motivational purposes, must also use those skills to encourage safe behaviours on site.

Professor Billy Hare, Glasgow Caledonian University

IMPORTANCE OF HEALTH & SAFETY FOR SUPERVISORS

The UK construction industry should be proud of the improvements that have been made since the introduction of the Health and Safety at Work Act in the mid-1970s. However, with annual occupational ill-health cases running at around 80,000, 30-40 fatal accidents per year, and over 5,000 non-fatal injuries, there is still clearly more work to be done.

Some of the skills needed today to manage health and safety risks are similar to those required in previous decades (e.g., safely work at height or avoiding electrical hazards), but others are becoming more commonplace (e.g., avoiding work at height through the use of drone technology, adapting to the more holistically safe off-site prefabrication techniques, embracing hand-held digital technologies to help manage, monitor and coordinate site activities safely).

While Health has historically been the poor relation to Safety, construction supervisors must be aware of the harm our construction technology and processes can inflict long-term. The ability to protect against hazards such as noise and vibration, musculoskeletal disorders, dust and other respiratory injuries is a must for any reputable site supervisor, not to mention the growing need for 'First Aid Mental Health' champions.

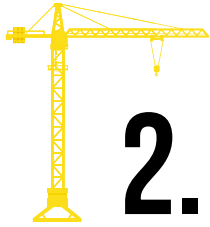
The supervisor skill-set doesn't stop at merely hazard spotting; the need has never been greater to possess a combination of supervisory, managerial and leadership skills. The technical knowledge of the average supervisor is expected to span the entire six volumes of CITBs 'Construction Site Safety' manual (GE700) - they are not expected to be a walking encyclopaedia, but it helps! Health & Safety training for site managers and supervisors has been proven to improve safety performance (Hare & Cameron 2011), but the mastering of managerial skills tends to be the most daunting prospect for most working supervisors⁸⁰.

Those who can count, think logically, communicate in plain English, plan (safe) systems of work, calculate resources, and take cognisance of lead-in times will, by default, be managing the work safely. There is, of course, a difference between management and leadership, and the need for leadership skills do not stop at the boardroom. Supervisors who lead by example, communicate effectively and are able to utilise those soft skills needed for motivational purposes, must also use those skills to encourage safe behaviours on site.

The skill-set of a successful site supervisor are many but what we need to remember is that those skill-sets needed for superior performance in areas such as productivity or quality, are the same as those required for superior health and safety performance.

Professor Billy Hare PhD, BSc (Hon), BA, MCIQB
BEAM Research Centre, Glasgow Caledonian University





2. OUR RESEARCH



2.1 INTRODUCTION

While there is a training deficit in many industries, this especially true in construction and it is vital that solutions are devised to prevent the continuation of this situation⁶⁴. While the prevalence of skills gaps in the UK construction industry has been widely recognised, few publications have explored this topic in the context of workplace supervision. There has also been little reflection in the existing literature on the efficacy of current models and methods used for workplace learning in the construction industry, with a recent study recommending that further research should be undertaken with decision-makers to identify: “... managerial perceptions and business-related barriers to the provision of workplace training”⁶⁵.

This research thus explores the skills gaps, areas for action and most-likely-to-be-effective training methods at the supervisory level within the UK construction industry.

The following questions have arisen from a review of the academic and trade publications:

- What are perceived to be the most significant skills gaps, both existing and likely to arise in the future?
- What impacts have these gaps had on construction organisations?
- Which topical areas should be prioritised?
- Which interventions are perceived to be most effective and should be implemented?
- What, if any, are the key barriers to providing quality training opportunities within construction organisations?

“History is a reminder that investments in skills must be at the centre of any long-term strategy for adjusting to structural change. A precondition for this is access to good information on skills needs - without which policymakers risk flying blind.”

NESTA (2017)

2.2 METHODOLOGY

To inform BCTG Construct's application to the CITB Flexible Fund, primary and secondary research was carried out. Data was used to provide a rationale for the project outputs that were being proposed. This pre-application research, together with insight from previous studies from trade and academic publications, formed the basis of the questionnaire used to inform this publication and can be accessed on the BCTG Construct website at www.bctgconstruct.co.uk

Our web based questionnaire was promoted through social media (e.g., Twitter, LinkedIn) and by emailing existing stakeholder networks. The survey was open to responses for 30 days and participation was not incentivised. The questionnaires utilised a combination of Likert scale, multiple choice, checkbox response options⁶⁶. Where questions were open-ended in nature, a comments box was provided to capture answers provided by survey respondents.

Respondents were asked general demographic questions regarding their age, gender, ethnicity, educational level, occupational type and level, sector and the number of employees in their organisation. There were both quantitative and qualitative questions in the survey, to allow respondents the opportunity to clearly express their perceptions of, and opinions on, the following topics: skills gaps, realised impacts of skills gaps, priority areas of focus for intervening, most effective training interventions and barriers to uptake of training opportunities within organisations.



2.3 RESULTS AND DISCUSSION

2.3.1 RESPONDENT CHARACTERISTICS

77% MALE

56% OVER 45

100% CAUCASIAN

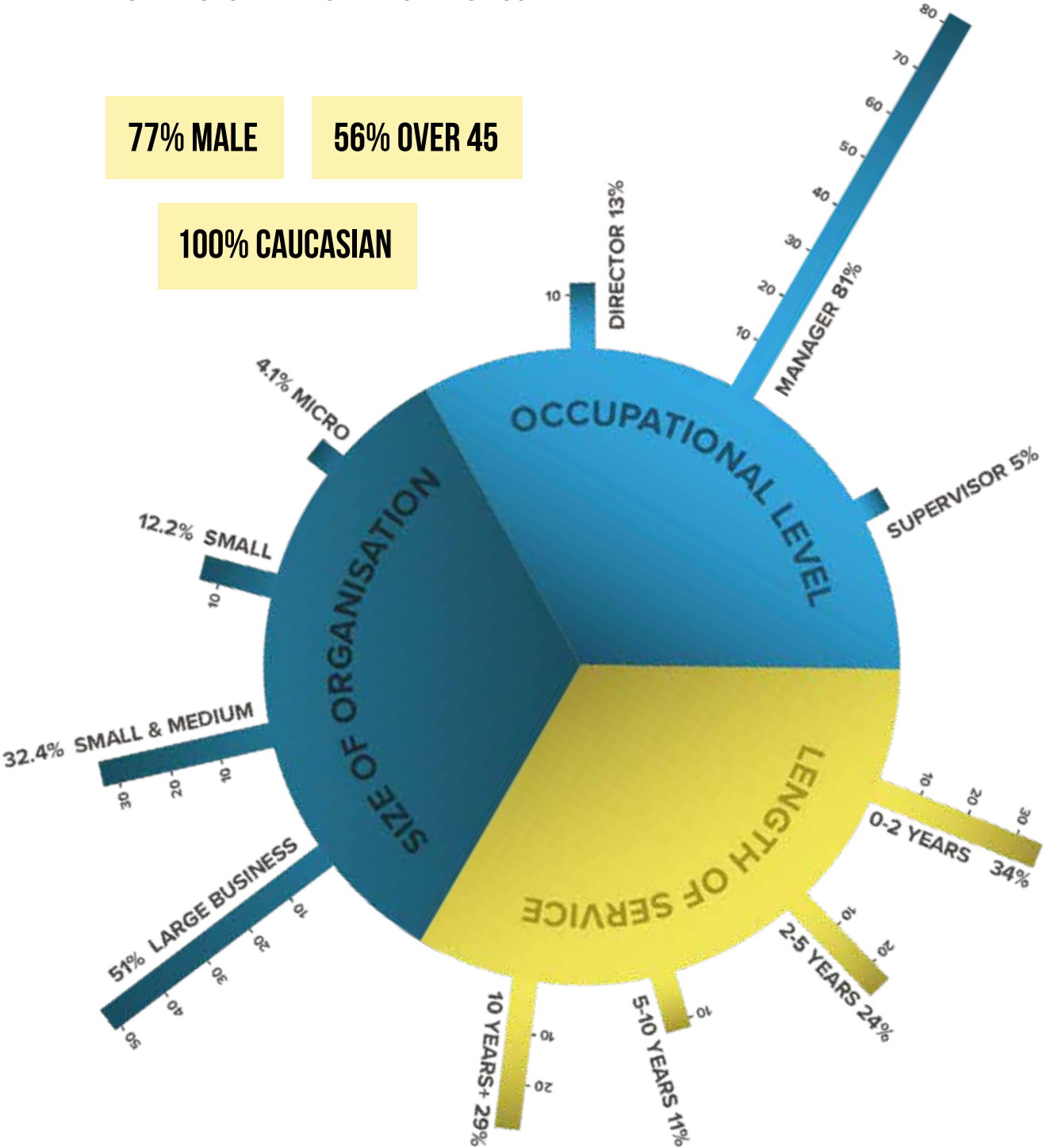


Figure 3: Respondent Characteristics

The majority of total respondents ($N_{TOTAL} = 86$) were construction industry professionals, whose occupational levels were: management (81%), director and senior level (14%) and supervisor (5%) respectively. Just over 10% of this sample were educators working in Further or Higher Education institutions in Scotland. Most respondents were male (77%), with remaining 33% of respondents identifying as: female, something else or 'prefer not to specify'. More than half (56%) of respondents were aged 45 or over, and all described their ethnicity as 'White'. Finally, just over one third (36%) of respondents had been educated to undergraduate or postgraduate (including PhD) degree level and just over a third had worked for their employer for less than 2 years. This sample is representative of the lack of gender and ethnic diversity within the wider industry, particularly at senior management level.

Some 51% of respondents worked for an organisation employing more than 250 people, with the remaining 49% split between SMEs (33%), small (12%) and micro (4%) businesses. In 2016 SMEs represented 99.5% of the 5.5 million businesses in the UK⁶⁷, and a large proportion of the 240,000 service providers operating within the construction sector. Given this, these results reflect the inherent difficulty engaging with smaller businesses; owners and managers often report not having the time to complete such surveys, or they simply may not be aware of their existence due to not having a social media presence.




2.3.2 PERCEIVED SKILLS GAPS

A recent study by CITB (2016) found that general knowledge and experience (27%), personal skills (18%) and role-specific skills were the three main skills areas where gaps existed across the entire workforce. In the most recent UKCES Employer Skills Survey (2015), 56% of construction employers reported role specific ‘specialist skills or knowledge’ as the skill lacking in their workforce, while other professional skills gap present but these did not feature in our top five (**Table 1**). This is most likely because supervisors are not usually expected to be specialists in a specific technical area, but instead are expected to possess the professional skills and personal qualities required to effectively manage and motivate their workforce on site. Indeed, a recent study found that employees considered these qualities to be more important for performing a supervisory role than technical competencies⁶⁸. Research has found that routine manual and cognitive tasks have declined over time, while non-routine tasks of both nature have increased in importance. This growth has been attributed⁶⁹ to the expansion of occupations that require individuals to be proficient at communicating complex information⁷⁰.

Respondents perceived Personal Qualities (e.g. effective communication, managing and training others) to be the most prevalent gaps at the supervisor level (**Figure 4**). Advanced IT and Complex Numeracy skills were also perceived to represent real gaps in the current supervisor workforce. The five least prevalent skills gaps paint a picture of the skills and qualities that the supervisor workforce are perceived by employers to be least lacking in. These responses suggest that supervisors tend to have a good working knowledge of their organisation and the products and services it provides, basic

Table 1: Perceived Skills Gaps at the Supervisory Level

Rank	Most agree	Most disagree
1	Effective communication	Organisational knowledge
2	Instruction & Training others	Basic Numeracy
3	Managing/motivating others	Team Working
4	Advanced IT skills	Produce & Service Knowledge
5	Complex numeracy	Computer Literacy



“ The core skills are there (health & safety and task specific competency) but what is lacking are the softer skills, leadership and motivation as well as enforcing the company policies, commercial awareness and knowledge of key legislation. Promoted supervisors at times struggle with the transition from operative to supervisor to manager and require ongoing coaching and support. ”

BCTG Construct Survey Respondent

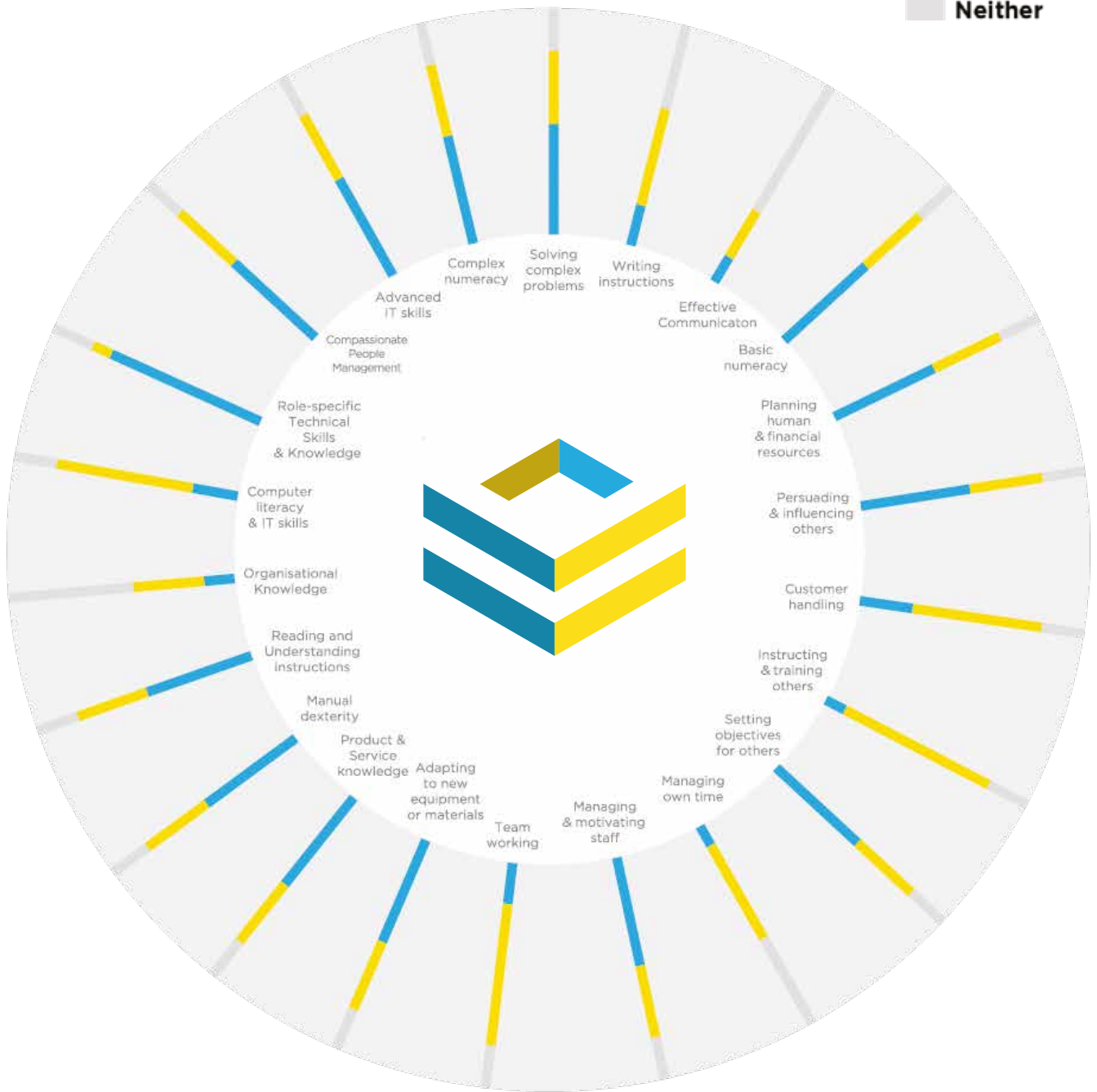




Figure 4: Perceived Skills Gaps at the Supervisory Level

The majority of respondents (62%) in our survey agreed that Advanced IT skills were lacking within their supervisory workforce, while Basic IT skills/Computer Literacy was generally considered to be in place within this population of workers. Research has shown that up to 40% of those employees considered to be 'not fully proficient' within their roles, are lacking in basic IT skills. This is concerning given the move towards digitalisation and an increasing need for digital skills in the workplace⁷¹. It is encouraging, therefore, that supervisors appear to have the basic skills in place but there is much work to be done to prepare this workforce for the move towards digitalisation.

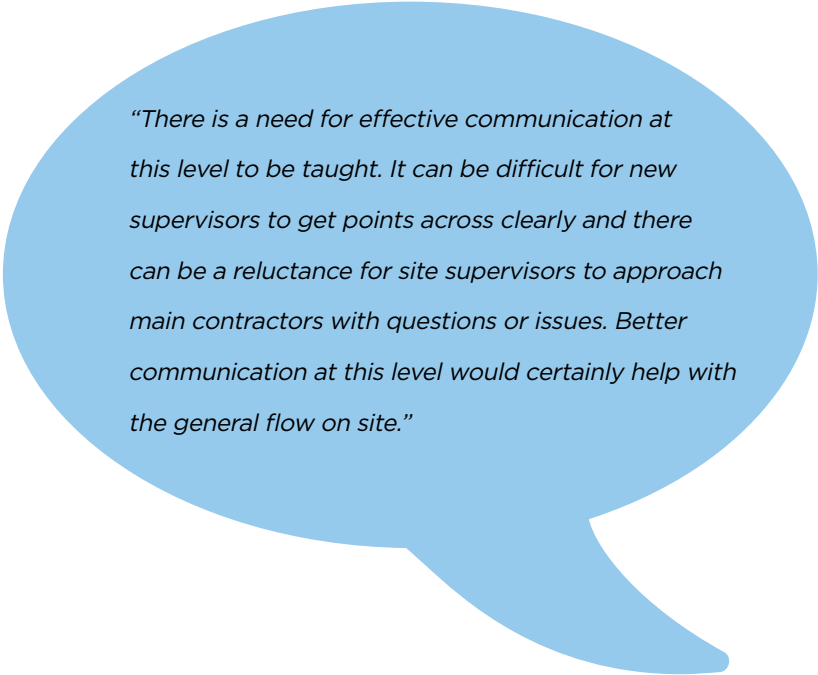
Our results also underscore the recognised importance of so-called '21st Century skills', with a strong emphasis on professional qualities over more manual or technical, skills. Indeed, our results echo what is being published in the wider literature.

Research by MACE (2017) sought to identify those construction occupations that would be most and least vulnerable to changes brought about by the actualisation of 'Industry 4.0'. The key message was that the number of employees working in manual roles on site is likely to decrease significantly in the next few decade and there will be a shift from manual skills (e.g. manual dexterity, control precision) towards cognitive competencies and transferrable personal qualities (e.g. decision making, systems thinking)

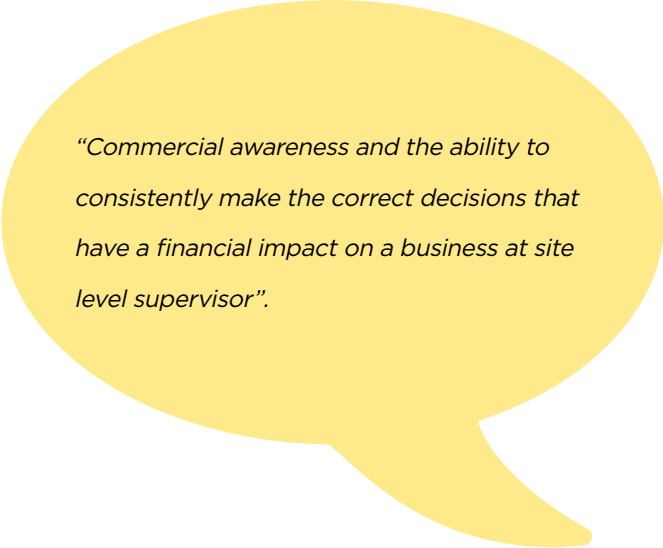
We also asked employers to provide their own perspectives on the supervisory skills gaps, and the key themes which emerged are captured in **Figure 5** below.

 ***I think the first bit of advice I would offer to young people considering a career in the industry is that if you don't get the results you're hoping for at school then don't worry. There are other routes to get to where you want to go, and college is a good one. Going to college doesn't necessarily mean you'll take longer to start working in the industry- I took four years to go from college to university to a job. I'd advise getting work experience whenever possible, even if it's short term here and there. It's good to see what it's really like on site, to get a sense of how people work together and what sorts of things managers will need to deal with. People shouldn't be put off by any negative images around the construction sector - there's a lot of positivity and a lot to be proud of working in construction. I'm happy to go to my work every day, the pay is good and the work is rewarding. I'd advise anyone thinking about construction to take a broad look at the industry because there is so much to it and so many different sorts of work.*** 

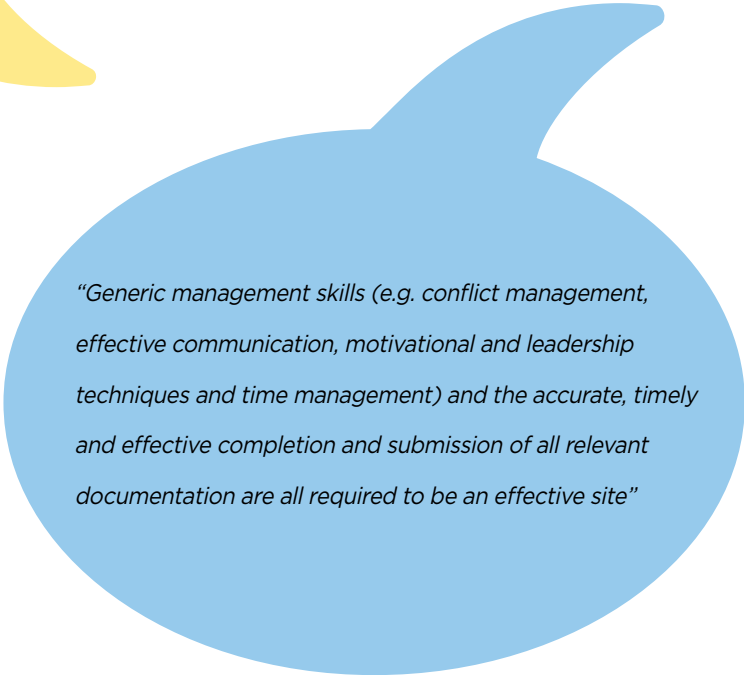
Declan McCulloch, Assistant Site Manager, Morgan Sindall



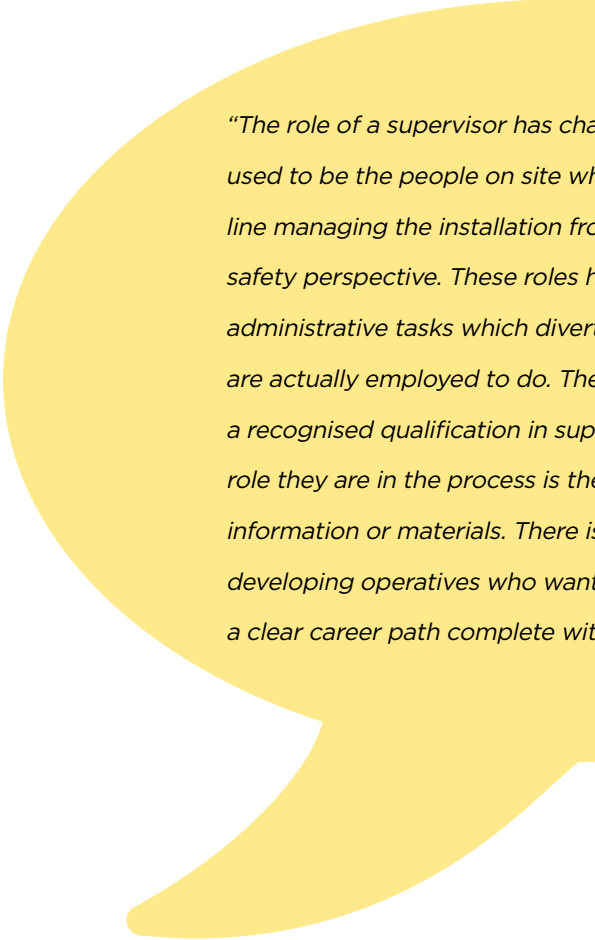
“There is a need for effective communication at this level to be taught. It can be difficult for new supervisors to get points across clearly and there can be a reluctance for site supervisors to approach main contractors with questions or issues. Better communication at this level would certainly help with the general flow on site.”



“Commercial awareness and the ability to consistently make the correct decisions that have a financial impact on a business at site level supervisor”.



“Generic management skills (e.g. conflict management, effective communication, motivational and leadership techniques and time management) and the accurate, timely and effective completion and submission of all relevant documentation are all required to be an effective site”



“The role of a supervisor has changed over time. It used to be the people on site who were responsible for line managing the installation from a safety perspective. These roles have moved into administrative tasks which divert resources away from what they are actually employed to do. There is a need for a recognised qualification in supervision. The role they are in the process is the management of information or materials. There is a need for developing operatives who want to progress and have a clear career path complete with training opportunities.”

Figure 5: Employer Perceptions of Skills Gaps

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no were always at the front
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ch training.”

“Supervisors are missing key skills in managing people from an emotional position. In years gone by ‘old school’ supervisors took a very unforgiving, hard line on how they managed people. Today they need understand how the people who they are setting to work are emotionally, as this can affect the work that they have given them. They also need to be more aware of gender and cultural background and be able to understand people’s needs and limitations.”

“Communication skills could be better - a lot of managers don’t seem to know how to get the best out of the people working for them, causing friction rather than harmony.”

“We believe in promoting from within but now find this more difficult because, whilst operatives fully understand how to build the project and manage their workforce, they quite often lack the IT skills required within the modern industry to progress to the level of supervisor. Conversely, operatives with strong IT skills are generally not as capable at the practical side of site management.”

2.3.3 REALISED IMPACTS OF SUPERVISORY SKILLS GAPS

Employers were asked if any impacts to their organisation that had been realised as a result of skills gaps at the supervisory level. They reported that the highest impacts caused by skills gaps in the workforce were: higher operating costs, increased workloads for other staff and difficulties meeting quality standards, while over 60% reported that skills gaps made it difficult to introduce new working practices, albeit this impact was considered to be low.

These results are broadly similar to those reported by CITB (2016) who found that 65% of employers reported increased workloads/overtime and 60% reported higher operating costs as a result of skills gaps within their wider workforce. CITB (2016) and the UKCES Employer Skills Survey (2015) both found that employers, particularly smaller businesses, were losing business to competitors due to skills gaps, while the majority of respondents in this survey found skills gaps to have low/no impact on this issue.





Figure 6: Realised Impacts on Businesses

2.3.4 BARRIERS TO PROVISION OF QUALITY TRAINING

Employers were asked to report on those issues that were preventing them from providing existing and aspiring supervisors with quality training opportunities. By far the most popular response was that employees did not have the time to participate (45%), closely followed by the reasoning that they, the employer, could not themselves spare the time to deliver (22%) or organise (17%) training. Cost concerns and a lack of relevant, accredited training were also cited as key barriers. These results mirror those found by CITB (2016), who found that one in four employers who have provided training to their staff in the previous 12 months cited 'finding the time to organise training' as a key barrier, while self-employed individuals were more inclined to cite cost (46%) and lack of staff time (34%) as the most significant barriers (reflecting the greater challenges faced by smaller businesses). It can therefore be surmised that, to overcome these barriers, more high quality, accredited training solutions must be developed that are easy to access and made available to employers at low or no cost.

Research has also revealed the most commonly cited reasons that employers have provided for failing to provide supervisors with opportunities to train. The top three reasons were: they perceived that supervisors did not require further training or were already fully skilled (53%), they were not able to award time off work to attend training (28%), or it was too expensive to send supervisors to training (19%)⁷⁵.

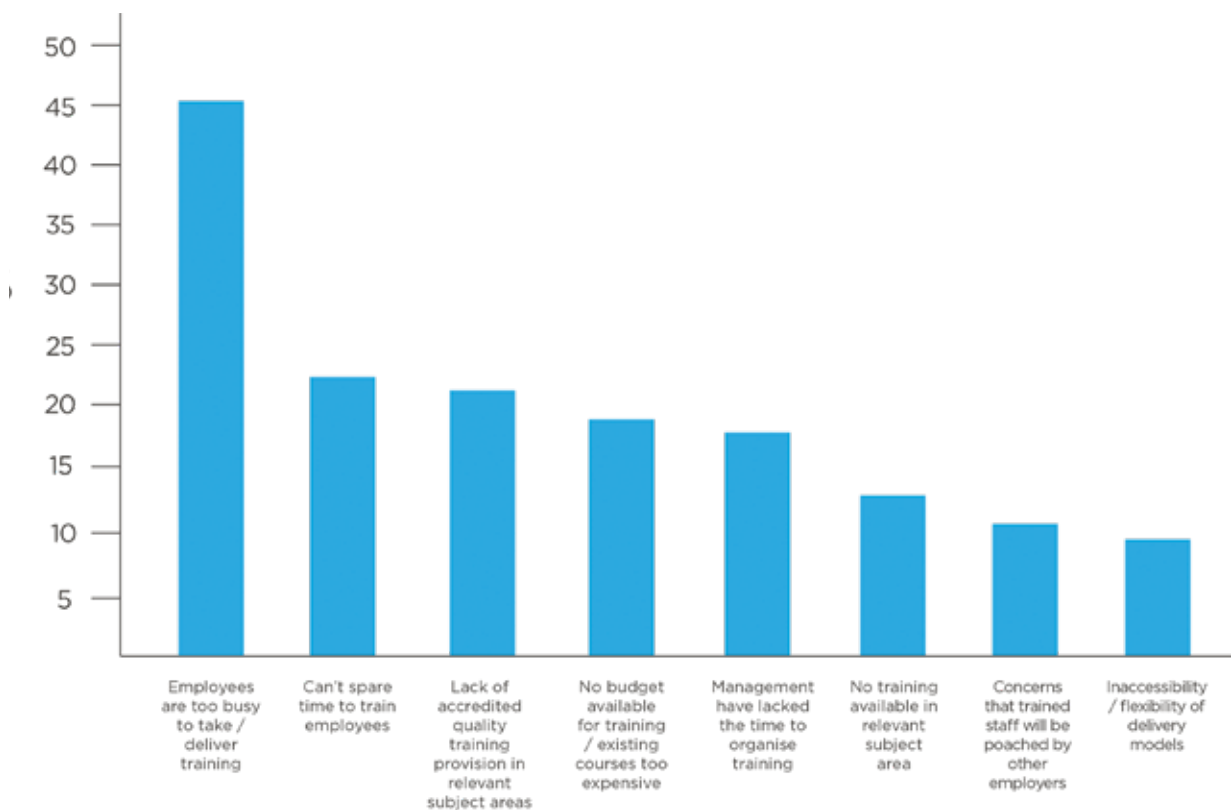


Figure 7: Barriers to Provision of Quality Supervisor Training

2.3.5 POTENTIAL ACTIONS TO ADDRESS SKILLS GAPS

To address supervisor skills gaps within the workplace, respondents most agreed that increasing and improving training activity (87%) is the most effective form of action that employers can take, closely followed by the introduction of mentoring or coaching schemes (78%) (Figure 8). Respondents tended to disagree that appraisals (18%) and increased recruitment (19%) would be effective for addressing skills gaps. CITB (2016) found that 92% of those employers with skills gaps in their workforce are already taking action to address them, with 72% claiming to have increased training activity, spend or expanded their trainee provision. Our results suggest that increasing and improving supervisory training provision be an effective way of addressing the wider skills gaps within the workforce.

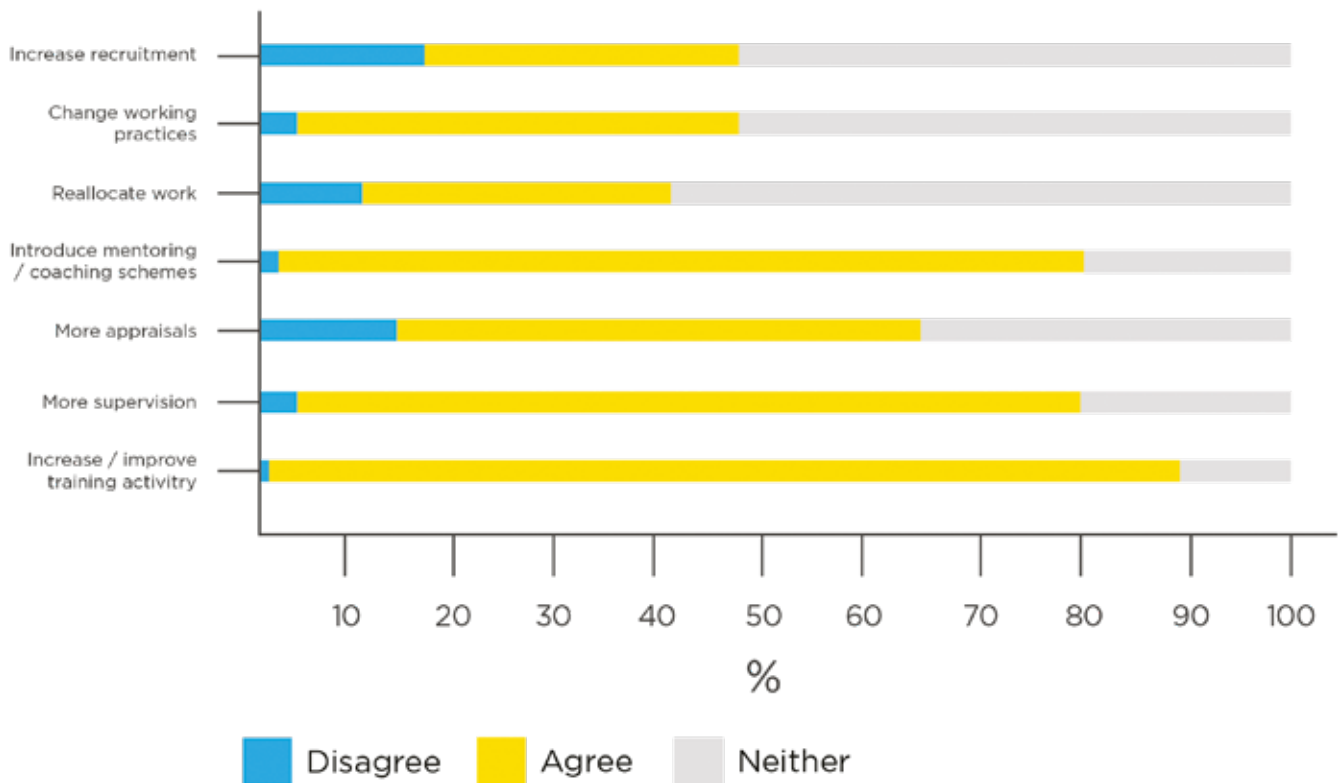


Figure 8: Potential Actions for Effectively Addressing Skills Gaps

2.3.6 PRIORITY SUBJECT AREAS

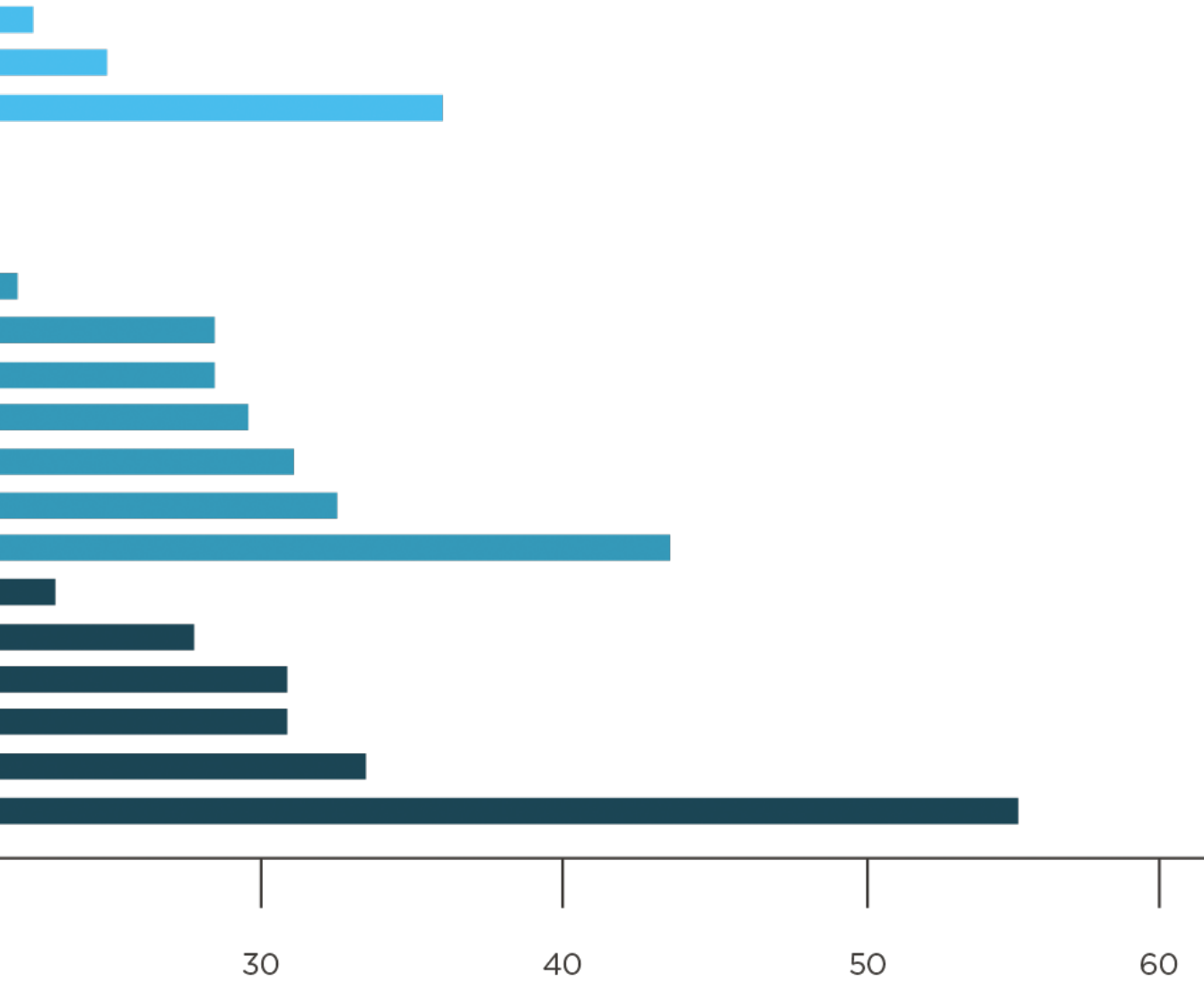
The top subject areas most frequently reported by respondents as requiring skills updating/improvement are displayed in **Figure 9** and **Table 2**.



Figure 9: Subject Areas where Training Opportunities should be focussed

“People drawn from diverse backgrounds and sectors who are empowered to ask the right questions (and) that enable companies to make better business decisions should be the norm. (Businesses) need to invest in talent, innovation and systems that allow them to provide services that clients value and want to pay a premium for. The race to the bottom pricing model is unsustainable.”

Abbas (2018)



	Construction Specific Professional Skills	Personal Qualities	Future/Digital Skills
Most Cited	Quality Assurance, Inspection & Testing	Project Management & Site Administration	Building Information Modelling (BIM)
Least Cited	Conservation & Restoration	Equality, Diversity and Inclusion	Smart Materials

Table 2: Most & Least Cited Subject Areas

EQUALITY AND DIVERSITY IN CONSTRUCTION

Equality and Diversity in the Science, Engineering, Technology and Built Environment sectors has been a social and political priority for a number of years. In recognition that the majority of jobs in the future will require some form of 'STEM' qualification, we need action now to ensure that everyone has access to these roles.

What is critical for the Construction and Built Environment industry to know is the well evidenced business case for equality in engineering and construction that has been proven to be worth over £170 million per annum to the Scottish economy alone. By 2025 the construction sector will need 400,000 more employees and, without attracting a wider talent pool to these sectors, the UK will be unable to remain globally competitive.

Just 11% of the construction sector workforce are women, within this only 1% of modern apprentices and site workers are women. With a growing skills shortage, we need to rapidly increase the attractiveness and inclusiveness of the sector and encourage women, young people, disabled people and the black and minority ethnic community to view this as an industry they can have a long and prosperous future in.

In the ten years that Equate Scotland have been leading in this area, we have worked with thousands of women and hundreds of employers. During this time, we have seen first-hand what needs to change in the STEM sectors to recruit, retain and progress women. First and foremost is culture; tackling the attitude that women do not belong in these industries, ensuring that discrimination is not tolerated and that managers and colleagues are trained on equality and diversity issues. Second is the way in which we work; creating good quality, flexible work, is key to ensuring that the widest net possible is interested in working in our STEM sectors, where we can, we should be striving for people to work in the most flexible way to accommodate not just care givers needs but to create better health.

Lastly, is the mechanics of where we work; particularly in the engineering and construction industries; PPE wear that fits women, environments which take into consideration the needs of the community around them, appropriate changing facilities and machinery which can be used by all.

Whilst this list may feel overwhelming, particularly for smaller employers, we know that time and resource invested in pursuing equality delivers a more productive, profitable and reputable company. A recent McKinsey Report (2016) explained that companies with higher levels of gender diversity, outperformed their male dominated competitors by 15%. In a time when our engineering and construction industries are in need of more people, it makes simple business sense to invest in equality.



Talat Yaqoob
Director of Equate Scotland





3. TOWARDS A SOLUTION

Our findings, together with those from existing literature, underscore the need for new and innovative training approaches to address existing and future skills gaps. While the maintenance of core technical skills is important, to retain competitive advantage within the sector employers need to focus on investment, growth and innovation.

3.1 BARRIERS TO EMPLOYER ENGAGEMENT WITH TRAINING

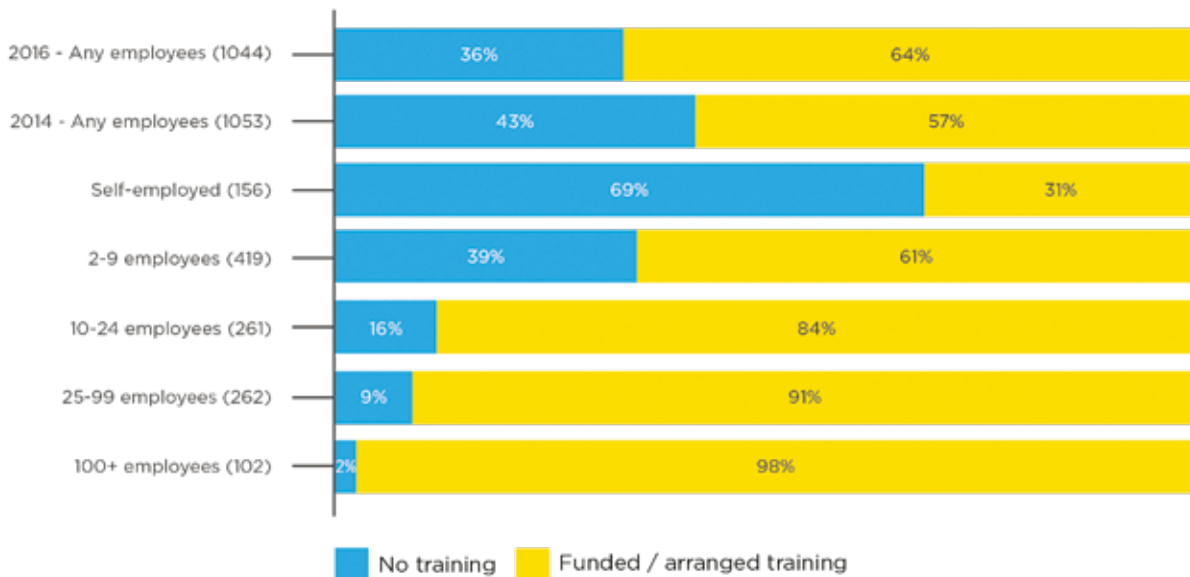



Figure 10: Proportion of Employers able to fund/arrange training (by size) (CITB, 2016)



Within the workplace two main forms of job related training occur: formal and informal. Formal training tends to be structured around theories, concepts and learning outcomes, while informal training helps to develop hands on skills without formally engaging learners in any form of pre-determined learning practices. Formal training refers to courses (e.g. conferences, workshops, seminars) or programmes (e.g. tertiary education, vocational programmes, apprenticeships) that are: directly related to an employee's current or future role, usually instructor-led, follow a set structure and lead to formal recognition (e.g. certificate, qualification) on completion⁷³. Conversely, informal training usually only occurs when a business need arises or an employee undertakes training on their own initiative for self-development reasons. Informal training does not usually lead to any form of recognised qualification and does not tend to adhere to any formal guidelines⁷⁴. Research has supported the use of both learning approaches, with some arguing that formal training can help to stimulate informal learning because employees become more likely to use formal learning methods and skills to later engage in informal learning within the workplace⁷⁵.

To be capable of acting “...knowledgeably, effectively, deliberately, strategically and reflectively in the often unchanging and uncertain construction environment” employees within the construction sector require both theoretical and practical training⁷⁶. While the Modern Apprenticeship (MA) Framework has created the infrastructure necessary for the ‘on the job’ development of technical skills, development of the existing workforce (particularly for ‘softer’ skills) is far less well established.

While 64% of employers have funded or arranged employee training in the last 12 months (CITB, 2016), only 30% of construction supervisors have received ‘on the job’ training and 60% have received some form of ‘off the job’ training. Further, just 69% of self-employed individuals have been unable to fund or arrange training for themselves or their contracted workers (39% of micro businesses) **(Figure 10)**⁷⁷.

Research has revealed the most commonly cited reasons that employers have provided for failing to provide supervisors with opportunities to train. The top three reasons were: they perceived that supervisors did not require further training or were already fully skilled (53%), they were not able to award time off work to attend training (28%), or it was too expensive to send supervisors to training (19%)⁷⁸. Together, these figures underscore the need for alternative, affordable and accessible modes of training aimed at the supervisor workforce.

3.2 NEW MODELS OF SUPERVISORY EDUCATION

The increasing rate of adoption and integration of digital and automated work processes is transforming the Construction Industry as businesses seek to unlock performance and productivity gains.

The development of a technically and digitally skilled workforce is therefore key to the realisation of the industry's drive towards inclusive and sustainable growth, fair work and long-term prosperity. However, evidence suggests that tertiary education institutes are struggling to keep up with the rate of change, with the curricula offer becoming increasingly misaligned with ever-evolving industry expectations. This misalignment is acutely experienced in supervisory training programmes. An ever expanding catalogue of responsibilities, the diverse nature of activity across the industry and productivity pressures present challenges to structuring and delivering a fit-for-purpose and impactful training provision.

To equip supervisors with the skills to flourish in the workplace, while meeting the needs and expectations of the labour market, it is vital that the education sector respond to the challenges associated with ensuring a responsive, adaptive and often anticipatory curriculum offer. Such a response will go a long way towards addressing both established and short-term skills shortages as well as emergent skills demands.

We have a collective responsibility to deliver a training provision that is continuously iterative and flexible, whilst maintaining robust standards within qualification structures that have global currency and legitimacy.

We can do this by working closely with industrialists to co-design and co-deliver programmes that are aspirational in intent, whilst reflecting and maintaining relevance to industry practices. The principles of co-design, co-delivery, and co-validation should become the standard model for the development of training and education programmes. These principles involve rethinking who, when and how programmes are designed – moving from a top-down, one-off 'professional experts' approach that may not include wider consultation, towards an iterative, structured process that includes input throughout all stages from a broad range of stakeholders.

Whilst supervisor training has often focused on legislative and compliance based responsibilities, it should be widened in scope to encompass the range of skills, qualities and competencies expected of the modern supervisor. The narrow, technical focus of existing training provisions is leading to the emergence of inexperienced and underqualified supervisors who are failing to manage the demands of the job and who can become prone to making mistakes and 'burning out'. We need to reframe our model of supervisor training from 'competence and compliance' to one of continuous improvement and a drive towards excellence. This extends beyond attendance at an educational institute or training provider to encompass integrated work based learning programmes as well as coaching and mentoring opportunities.

If the industry is to realise the productivity gains made possible in this increasingly digitised world, supervisors are likely to be at the heart of any future success.

Douglas Morrison

STEM & Innovation Lead, City of Glasgow College

Director, Scottish Institute of Innovation and Knowledge Exchange



The thing I enjoy most about my role is being part of a project that starts from a big, empty area and ends up with a brand new development and overseeing the whole construction stage. Seeing end users pleased and excited about their new building is a great sense of achievement. We recently finished a new primary school in Glasgow and the teachers and kids were delighted with their new educational facility which made me proud to have played a key part in delivering it. The main challenge is managing personalities on site - especially the difficult ones! You need to find a way to keep a team of people working together to meet a tight schedule. The projects themselves can be challenging, with complex designs, tight budgets and timescales, but that's what we're here to do. Dealing with subcontractors can also be challenging - I depend on a lot of people turning up when they say they will, and doing what they say they would do. Managing that process - and what happens when something goes wrong - can be a challenge.

Declan McCulloch, Assistant Site Manager, Morgan Sindall

3.3 KEY RECOMMENDATIONS

Since evidence has shown that the current supply of skills to the construction industry is unlikely to be sufficient to meet the increase in demand that has been projected⁸³, there is a need for the sector to:

- Maintain established professional skills, technical knowledge and experience;
- Develop and enhance personal qualities;
- Build higher level skills reflective of the increasing technical complexity of construction;
- Increase flexibility of the workforce to be adaptive to future changes, including the digital revolution.



The Construction Industry must make a concerted effort to engage young people and convince them that the industry can offer a positive career of choice. Failure to fully engage the emerging workforce is likely to lead to long-term systemic challenges in delivering future project.



Existing and aspiring supervisors require regular access to robust formal and informal training opportunities. This cuts across college or university based programmes, workplace learning, specialist training provider provisions and structured work-based activities.



Training provision should be widened in scope to encompass the range of skills, qualities and competencies expected of the modern supervisor. The narrow, technical focus of existing training provisions is leading to the emergence of inexperienced and underqualified supervisors who are failing to manage the demands of the job.



Businesses must prepare to take advantage of the wide range of new and emerging technologies in order to realise the productivity, efficiency and quality of construction activity targets identified in the Industrial Strategy.



High quality accredited Continuous Professional Development programmes must become commonplace to service the upskilling and reskilling requirements of the industry. The principles of co-design, co-delivery, and co-validation should become the standard model for the development of training and education programmes.

“ This is about creating a vibrant, re-skilled, fully integrated, more predictable and productive industry such that traditional working and new approaches can co-exist and complement each other, driving much wider longer-term benefits. ”

Mark Farmer (2016)

“ *There is a truth and a danger whenever sustainability is discussed. The danger is that it gets lost in the ‘Green Agenda’, and is perceived only to be about preservation of biodiversity, green energy or the prevention of global climate change. The truth is that it is a complex process of mediation between the needs and desires of all of its component parts, whether they are social, economic or environmental. If a construction employer does not ensure the safety of their employees and/or the show disregard for the protection of the environment, they are not going to win new business. Fact.* ”

John Logan, Sir Robert McAlpine Ltd



CONSTRUCTING A SUSTAINABLE FUTURE

Corporate. Social. Responsibility. An ethos intended to portray an engaged strategy for the betterment of society and environment...Really? It seems to strike a wrong chord with me; 'corporate' implying a faceless entity devoid of a personal touch, and 'responsibility' simply meaning that there are rules and regulations which ensure you have to act. I prefer the term 'Sustainability.' Within the construction industry sustainability is still seen as a black art; there is a lack of understanding which perpetuates the myth that it's an additional aspect to community and environment, rather than being the overarching concept which encompasses all. Sustainability is simply the name given to the processes which allow the passage of common sense into positive change, and it is in this area I believe we have a widening gap that negates the opportunity for people of all levels and disciplines to learn and understand the interconnecting principles that govern their own lives as well as the performance of their organisations.

There is a truth and a danger whenever sustainability is discussed. The danger is that it gets lost in the 'Green Agenda', and is perceived only to be about preservation of biodiversity, green energy or the prevention of global climate change. The truth is that it is a complex process of mediation between the needs and desires of all of its component parts. If an employer does not ensure the safety of their employees or they show disregard for environmental protection, they will not win new business. Fact.

It is becoming increasingly important for employers to have a supervisor workforce that understands the basics of environmental legislation; evolution, past and future. They must be prepared for the introduction of new 'lighter touch' enforcement regimes with a wider range of offences and penalties based on community outcomes, yet still underpinned by heavily regulated core regimes for large-scale/high impact offences.

Contamination and ground conditions will become an increasing consideration as development land becomes scarcer and the implications and controls associated with environmental protection become more prevalent together with the cost of remediation techniques. Ratings schemes such as BREEAM, WELL and CEEQUAL will evolve and present their own challenges in terms of building and infrastructure performance, but also their connectivity with the natural and social environments with which they are a part. Finally, due to Brexit the future of transposed European Directives is unknown - it is possible that the Government may repeal of some core environmental legislation while tightening others.

Social sustainability is perhaps the biggest 'growth area' for the construction sector. The benefits to economies, both micro and macro, are obvious; the creation of new jobs, the recirculation of currency in measuring economic impact and building resilience in supply chain security are all justifiable. The differences that can be made to people's lives and the communities in which they live are often the understated, hard-to-measure areas of positivity that construction projects bring to communities. This is also an area where greater understanding could be gained as social sustainability objectives are specified in a growing number of contracts. It is very difficult to legislate for, and is the equal and opposite part of the sustainability spectrum to highly enforceable environmental legislation. It requires a different approach, but also an initial understanding which will allow 'internal' industrial change rather than contractual.

I'm often asked "What is sustainability?" The simple answer is "Whatever you want it to be." As an individual, or as a part of your organisation, you can make the difference everyone needs.

John Logan
Sustainability Manager,
Sir Robert McAlpine Ltd



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